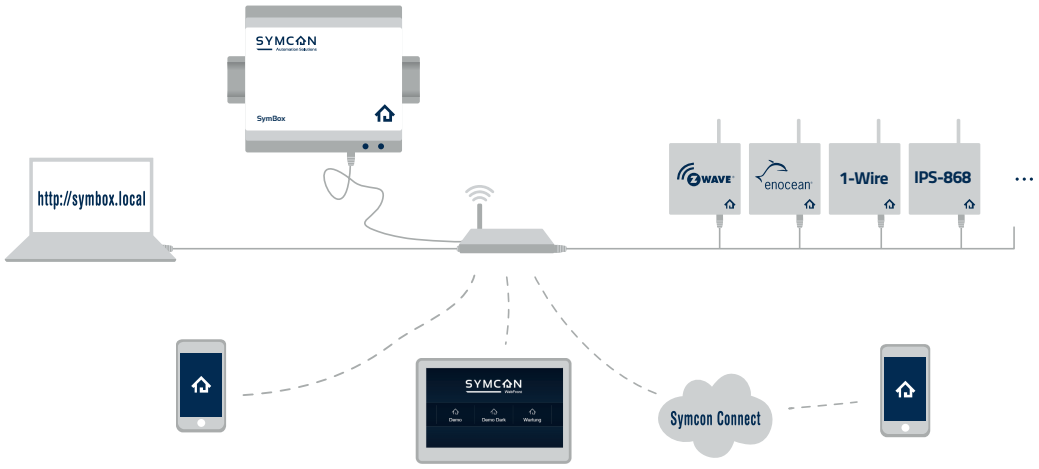
SYMCON
Automation Solutions

SymBox / SymBox^{neo} / SymBox Pro

Manual

Inhaltsverzeichnis

1 Introduction



The SymBox is the all-in-one solution for your home automation. The SymBox integrates seamlessly into your existing network. Licenses, backup & restore, remote access, and system settings can be managed via any browser. Log files can be used for further diagnosis.

The SymBox uses the software IP-Symcon to access the corresponding IP gateways of the used systems and to centrally control the visualization. The included IP-Symcon Management Console allows the configuration of a personalized home automation.

2 Setup and Connecting of the SymBox

The **SymBox** comes in a 4M wide case with a DIN Rail bracked on its back, which facilitates easy installation in electrical distribution boxes and panels.

2.1 Delivered Items

- SymBox with DIN Rail bracket
- Phoenix Corp system connector plugs
- Quickstart Tutorial

2.2 Required Components

- A 5W power supply*
- A LAN cable (RJ45)
- A 2-wire cable for power supply (5V with black DC clamp (SymBox revision 2015); 5-24V with green DC socket (SymBox^{neo} since revision 2017); 24V with a green DC socket and metal case (SymBox Pro since revision 2022))

Working on distribution boxes must only be done by trained personnel. Otherwise, there are dangers of fire or electrical shocks!

2.3 Setup

It is recommended to mount the SymBox to a TS-35 DIN Rail in the switchboard. 4M / 4SU of space is required. A LAN cable with an RJ45 plug needs to be installed in the switchboard for communication with the SymBox. While installing, VDE regulations, e.g., distance between the SymBox and voltage-carrying parts, need to be ensured. Alternatively, the SymBox can be set up at a location without DIN rail assembly.

2.3.1 Mounting SymBox onto DIN Rail

To install the SymBox into the DIN Rail, first line up the bottom part of the bracket with the bottom edge of the DIN Rail.
Note: the spring in the bottom part of the bracket must be *behind* the bottom edge of the DIN Rail!.
Next, push the SymBox upwards, this will compress the spring in the bracket. The top edge of the bracket should clip into the top edge of the DIN Rail with an audible click. The SymBox is now secured to the DIN Rail.

*A suitable 1-Module wide DIN Rail power supply can be purchased separately

2.3.2 Removing SymBox from DIN Rail

To remove the SymBox from the DIN Rail, push the SymBox upwards to compress the spring in the bracket. The SymBox should move by around 2-3mm. While applying pressure upwards, rotate the top of the SymBox away from the DIN Rail. The SymBox should now come off easily.

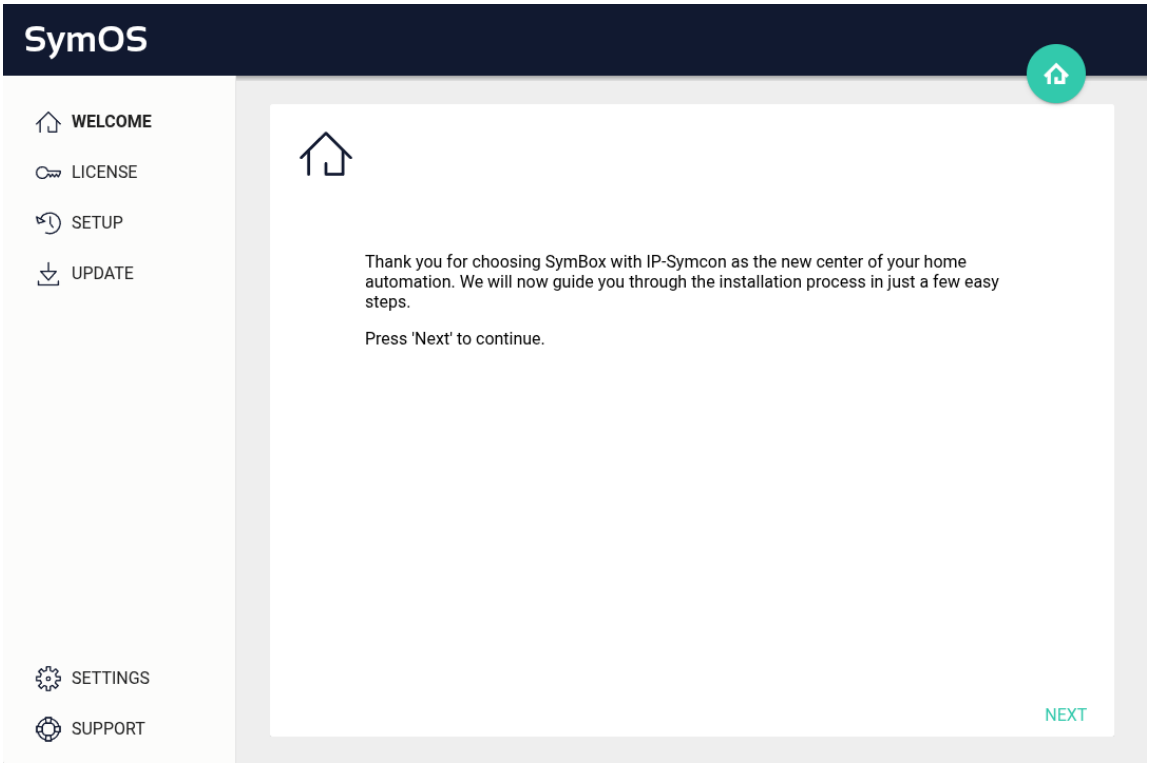
2.4 Connecting

After connecting the power supply and the LAN cable, the SymBox is ready for software installation.

3 Installation of the SymBox

After the SymBox was set up correctly, it takes a short moment until it is accessible over the network.

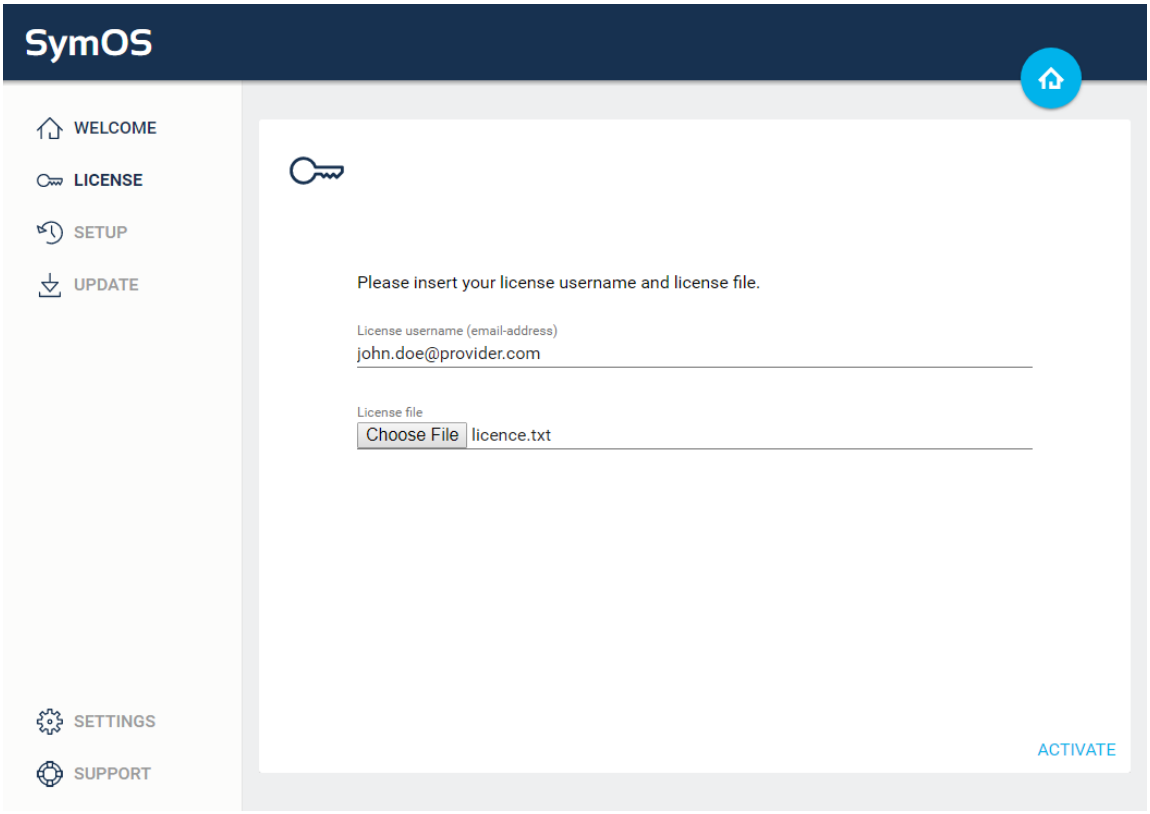
The SymBox offers a web interface which can be accessed via browser. When entering the address "`symbox.local/`", the following page is displayed:



The configuration of SymOS, the operating system of the SymBox, begins by clicking "NEXT".

3.1 License Setup

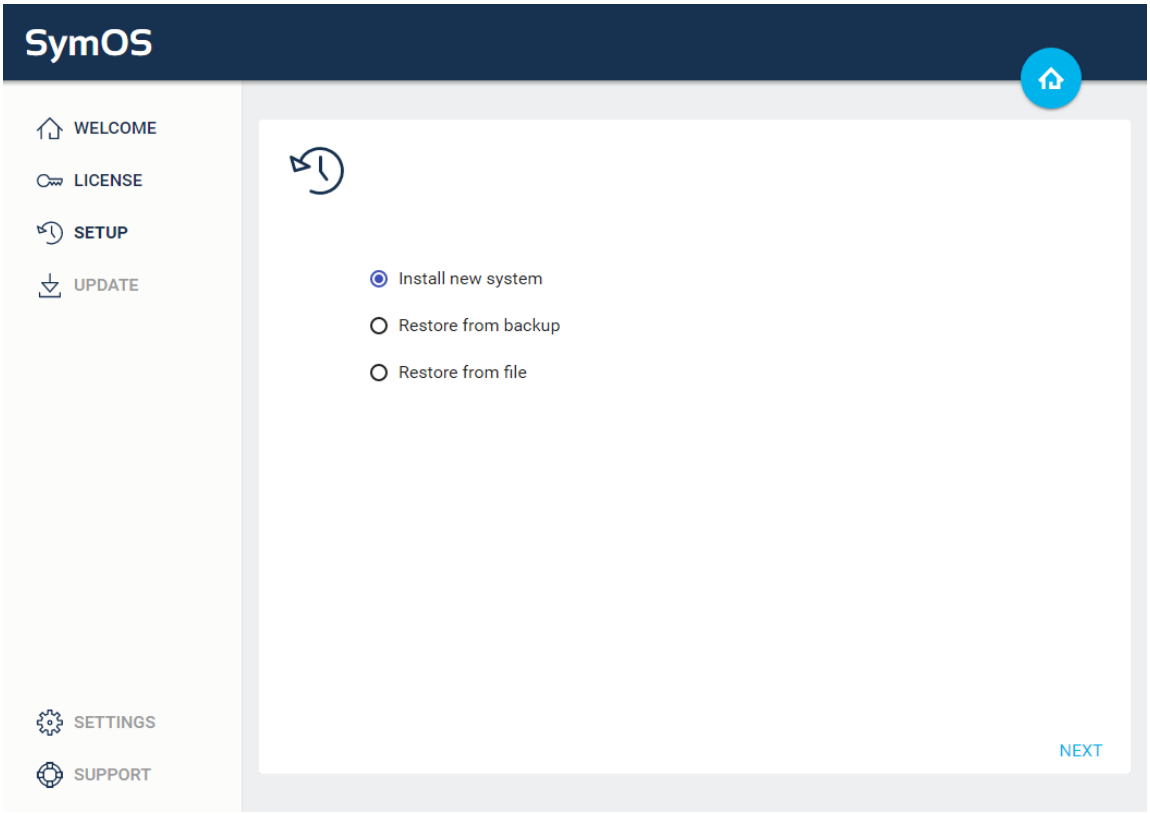
The first step is the entering the software license to activate the SymBox. The e-mail address that was used while ordering the product and the license file have to be entered. The license name has been sent with the same e-mail that contains the license file.



3.2 Configuration

It is possible to select whether a fresh IP-Symcon should be installed or a previously created backup should be used.

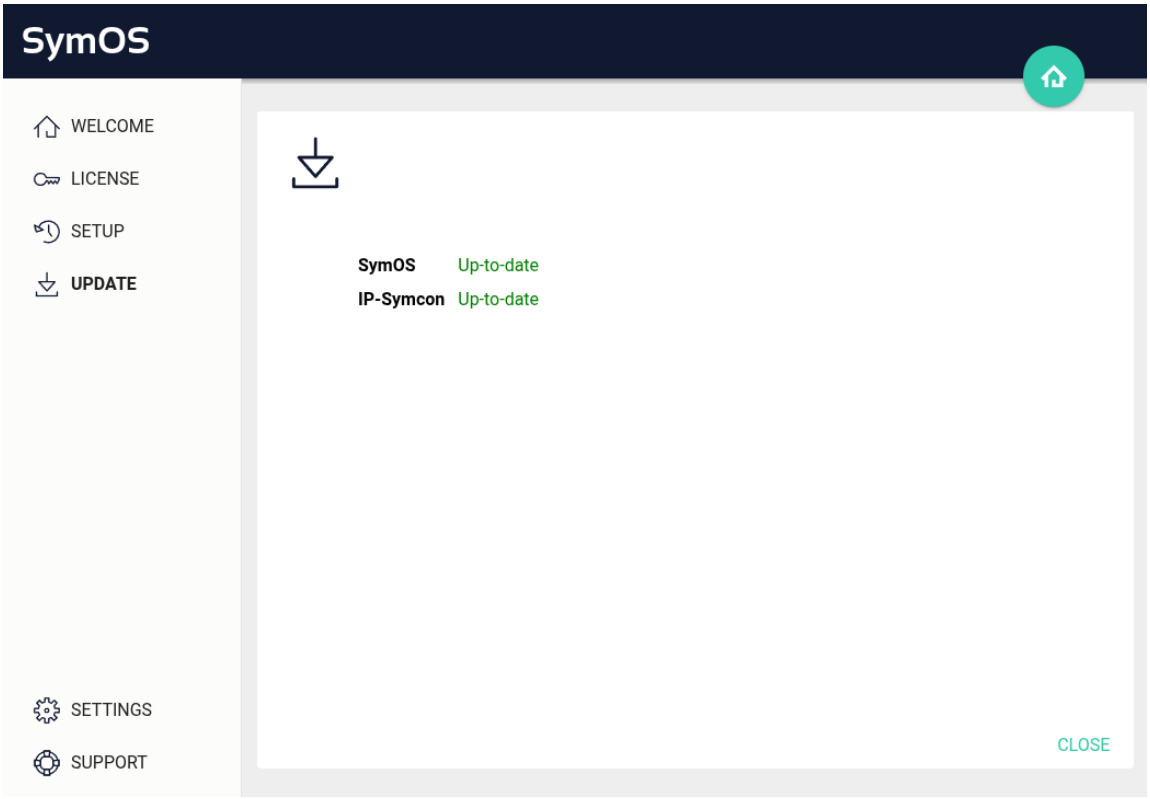
When recovering from a backup, only the settings of IP-Symcon, scripts, media, and records from the database are recovered. The settings specific to the SymBox are unaffected.



After successful configuration, the SymBox checks for updates.

3.3 Update of IP-Symcon

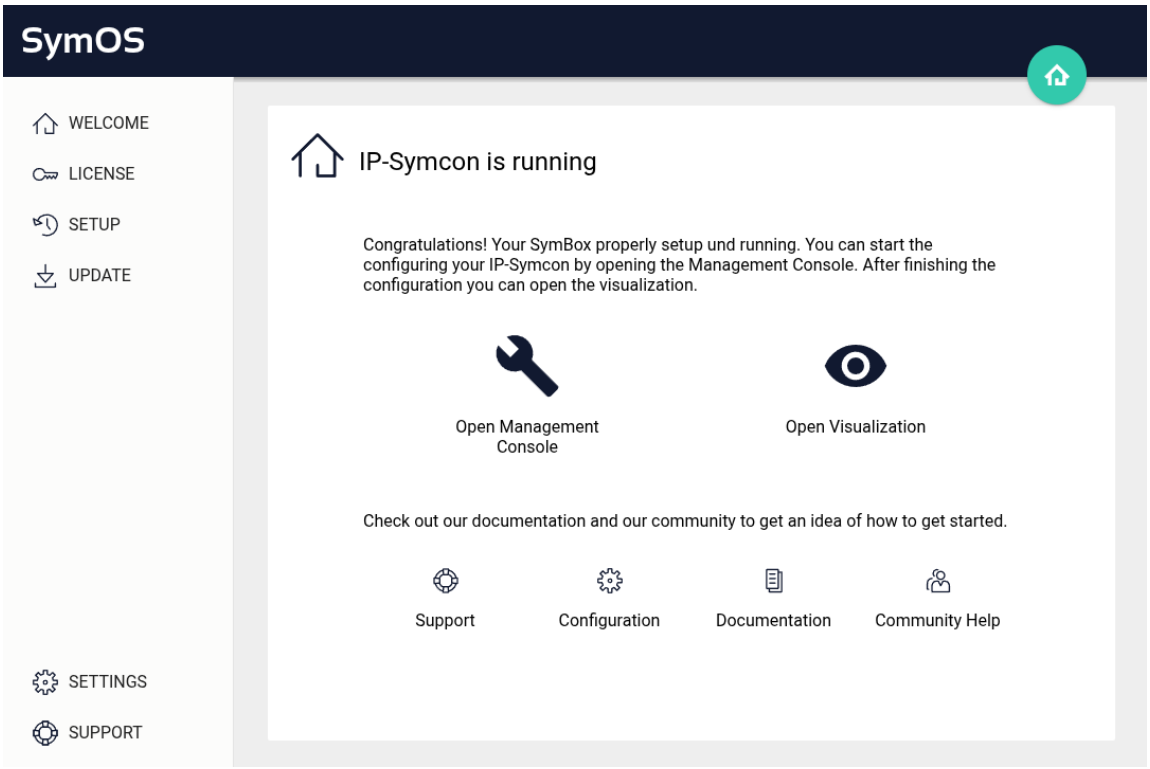
After successfully verifying the license and activating the SymBox, IP-Symcon is updated to the latest version. Using this option can also be used later to keep IP-Symcon up to date.



The current version of IP-Symcon is shown with “CONTINUE”. Another click on “CONTINUE” starts the installation.
On successful completion of all updates, the SymBox is operational after an automatic reboot.

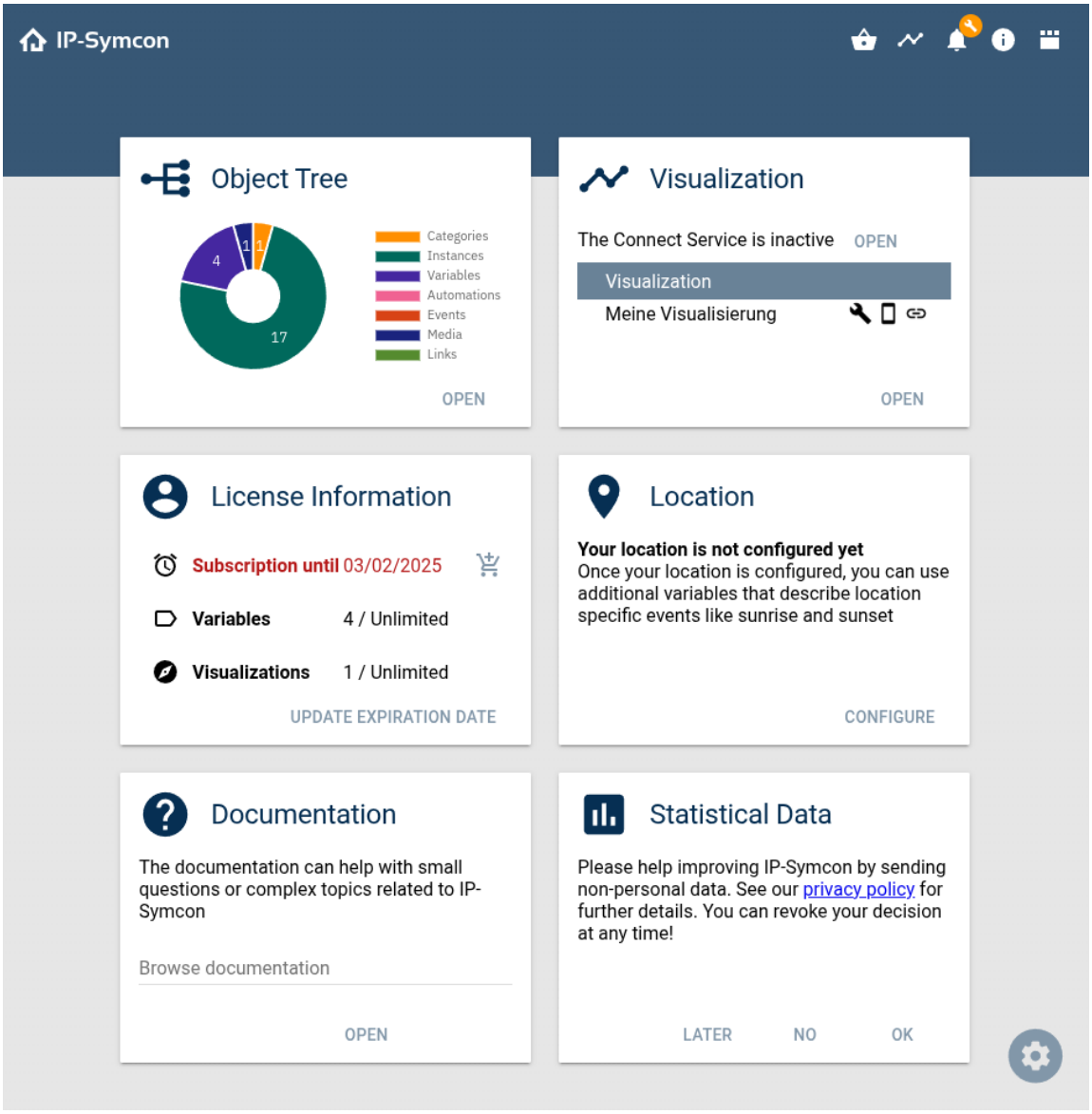
4 Normal Operation

The overview page contains relevant links for further use of the SymBox. It is also possible to download and start the management console for configuring IP-Symcon.



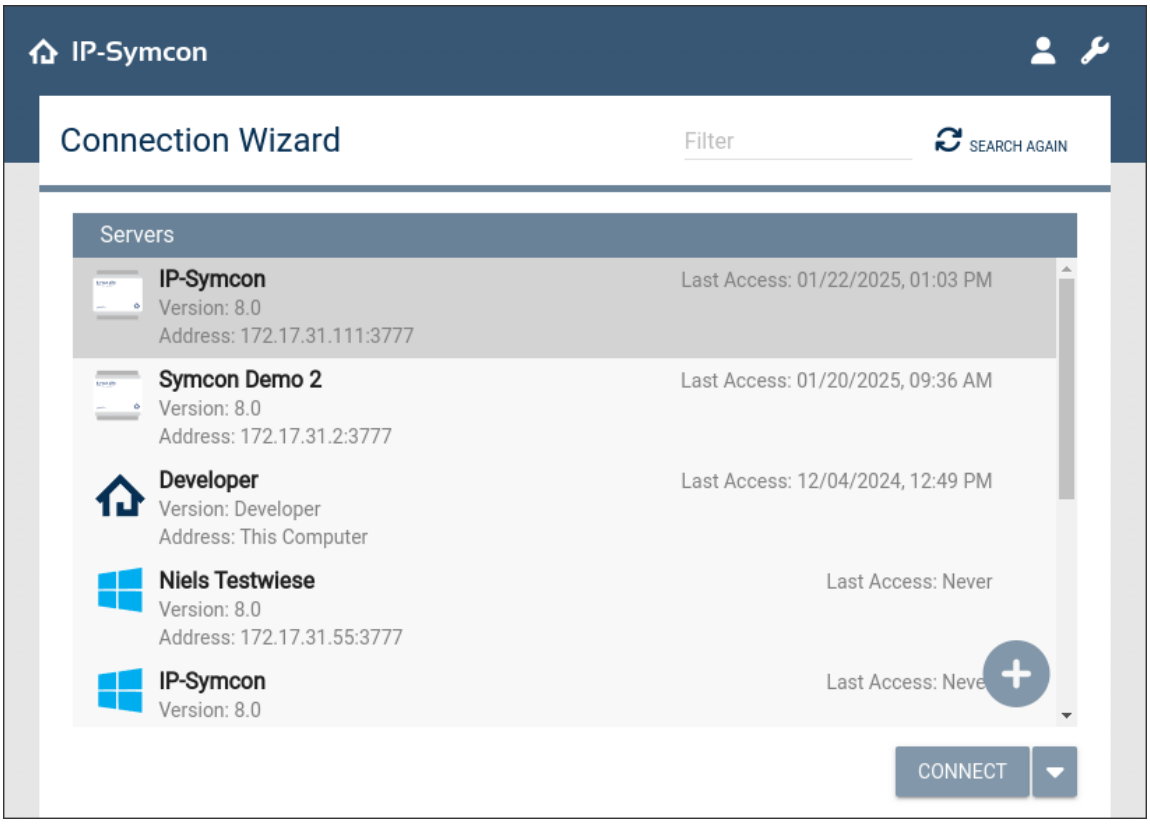
4.1 Management Console

The Management Console is used to manage and configure connected devices and the visualization. It is launchable from the SymOS start screen by clicking on “Open Management Console”; it will open in a new browser tab.
Once the page is loaded the main widget display appears of the IP-Symcon server, which provides full system configuration.

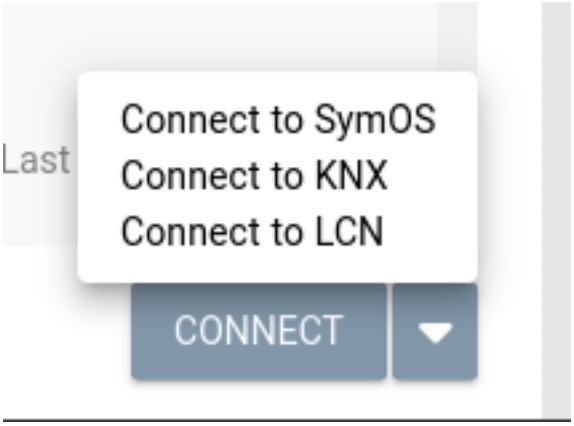


4.1.1 Pro Console

Alternatively, the Pro Console may be used instead.
The application is available for download in the download section on the Symcon.de website, for various operating systems.



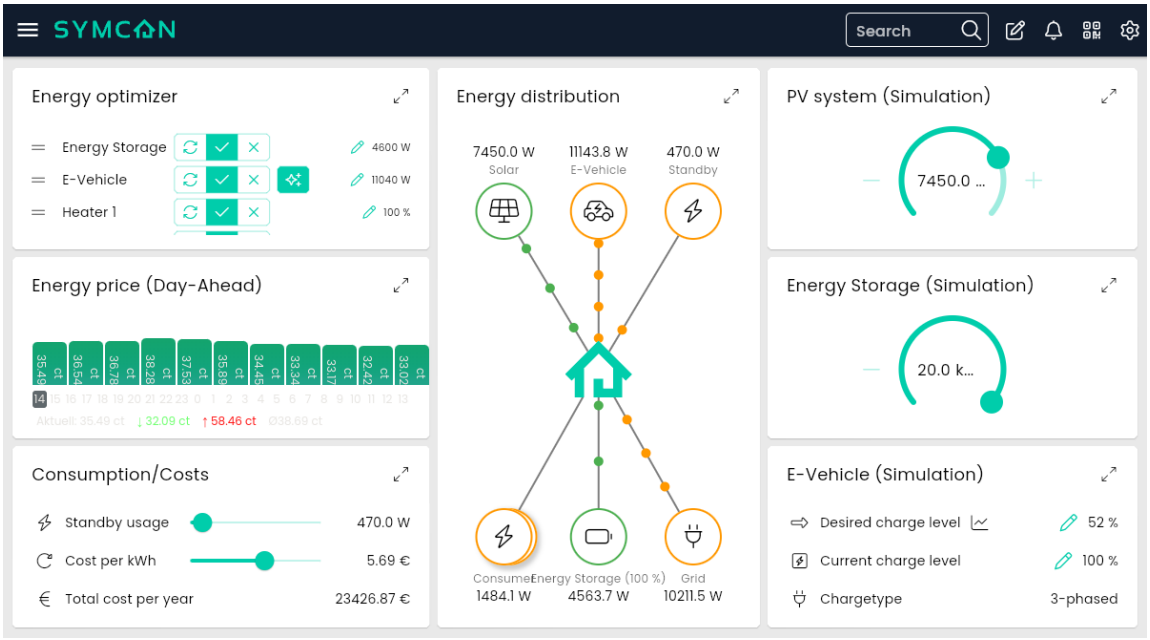
After selecting the desired SymBox, a drop-down menu on the lower right is available for establishing a connection for KNX and LCN systems, respectively, via SymOS Connect:



Setup and configuration of SymOS for KNX and LCN is described in chapter SymOS Connect for KNX / LCN.

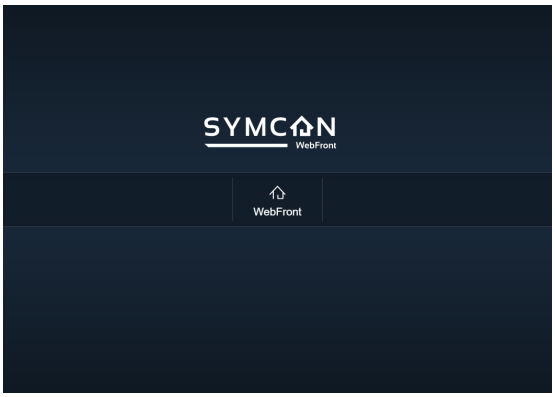
4.2 Visualization

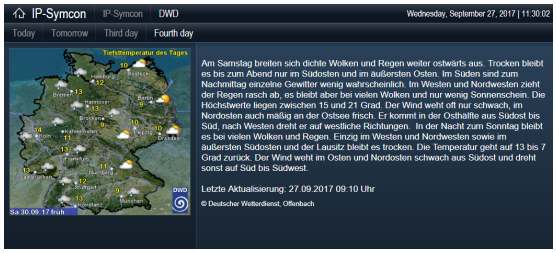
The Tile-Visualization is one visualization of IP-Symcon and can be accessed via a browser. The configuration of the WebFront is explained in the German documentation.



4.2.1 WebFront

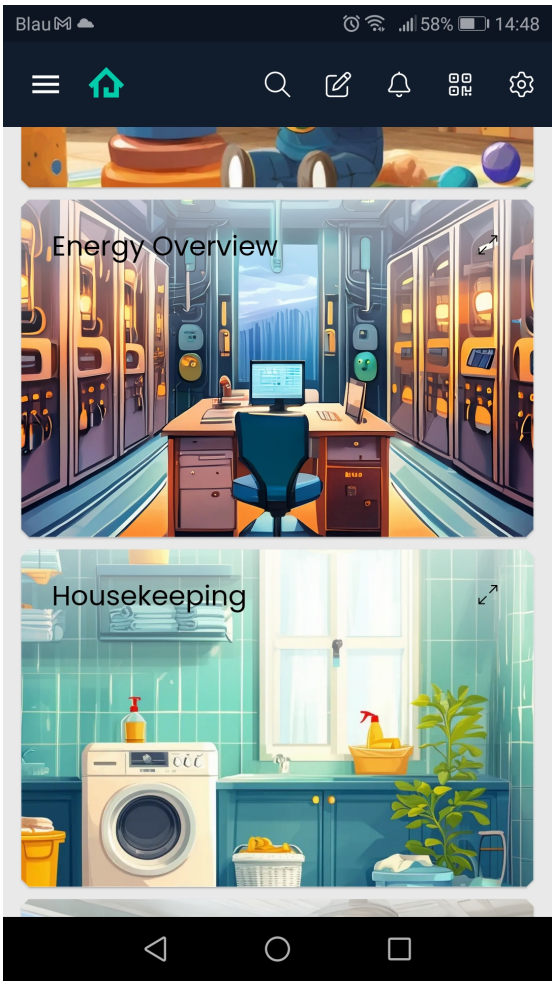
Alternatively, the Webfront-Visualization is still available. The instructions for configuration and setup are available in the German documentation.

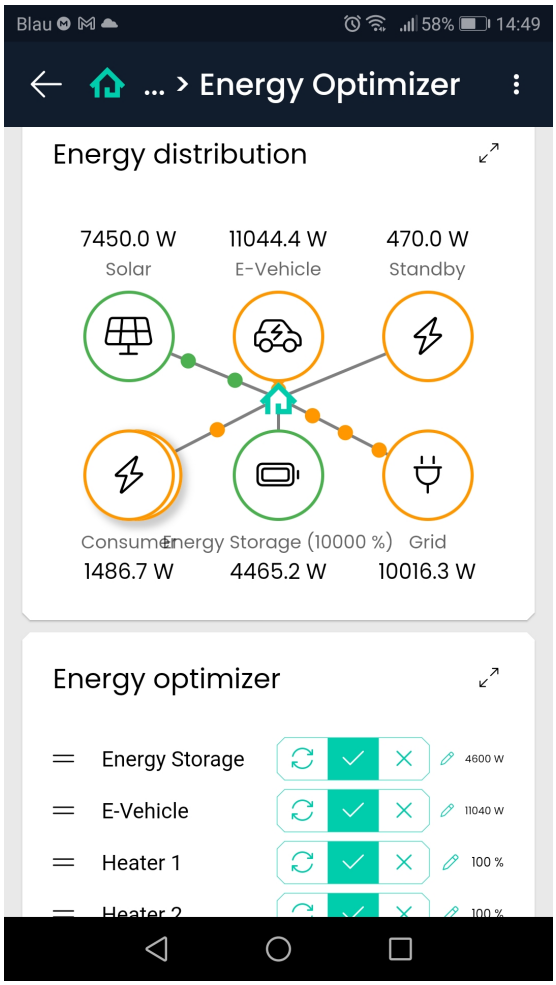




4.3 Visualization Android and iOS

The IP-Symcon app can be downloaded in the corresponding app stores and is available for iOS and Android devices.

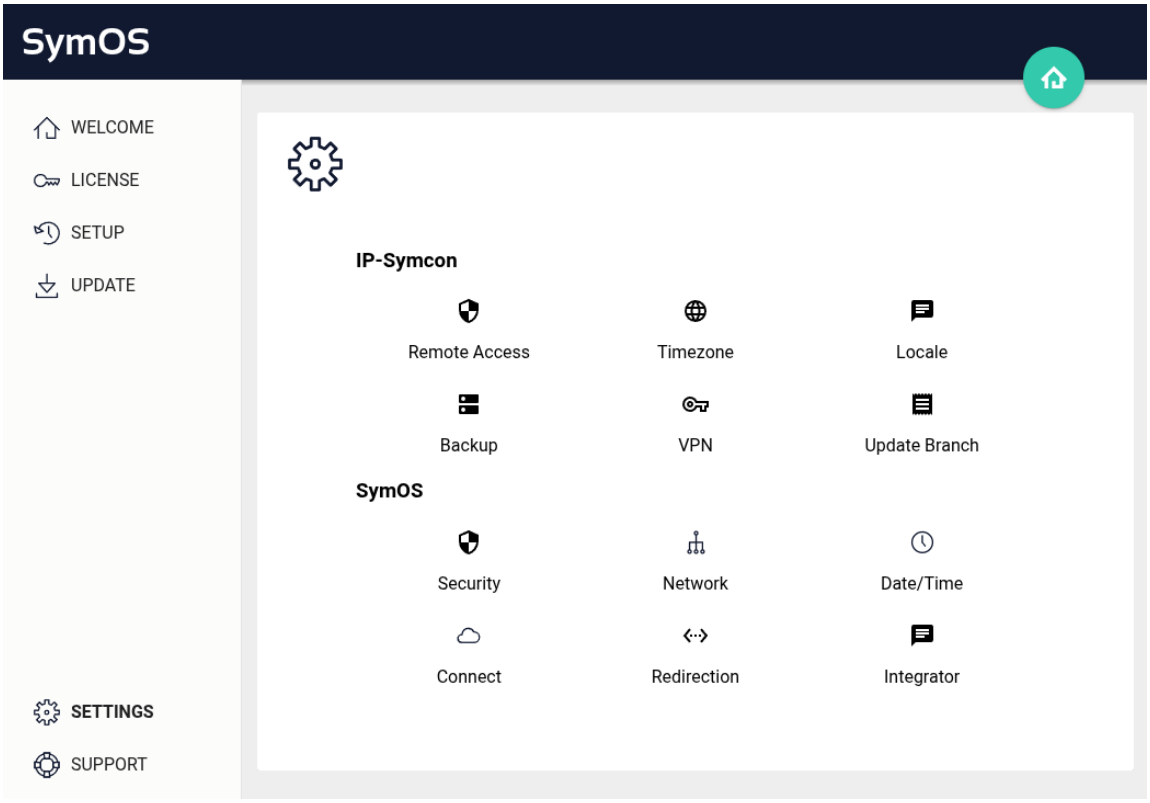




By scanning this QR-Code, the appropriate app will be installed on your smart phone:

4.4 Settings

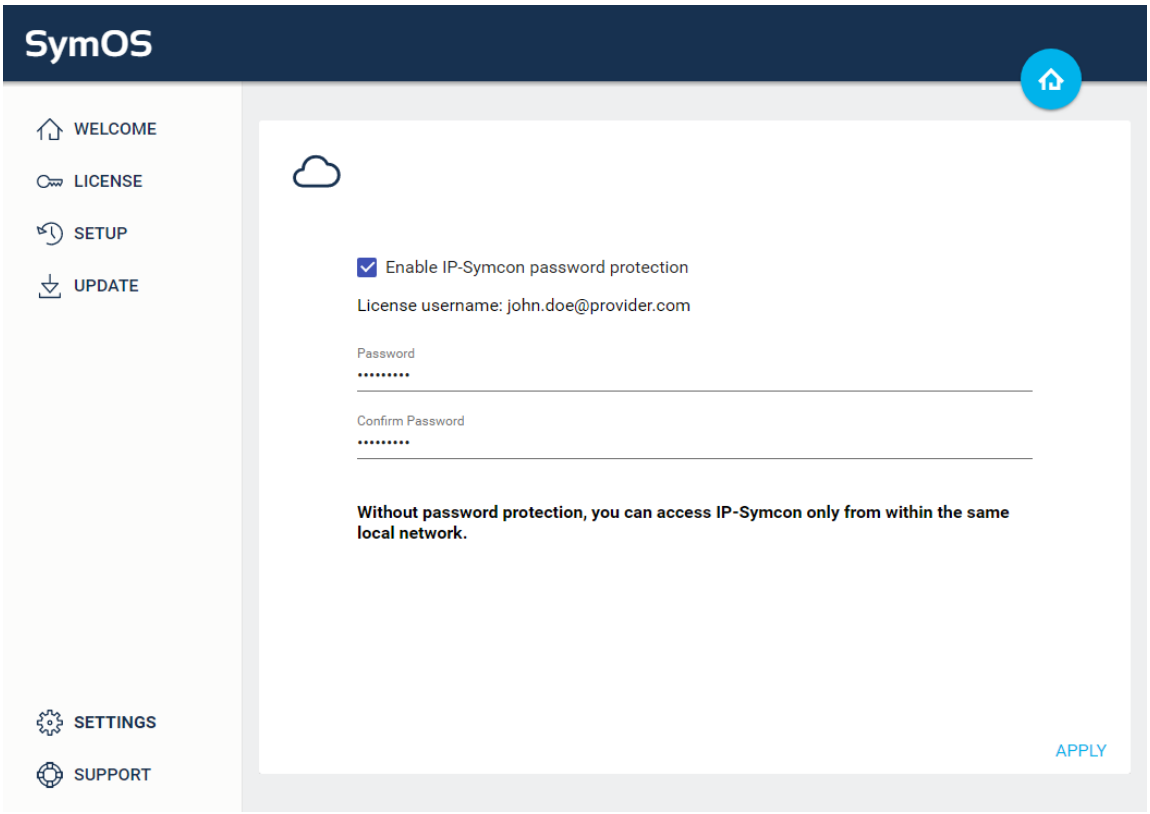
Various system properties can be changed in this menu item.



4.4.1 Remote Access

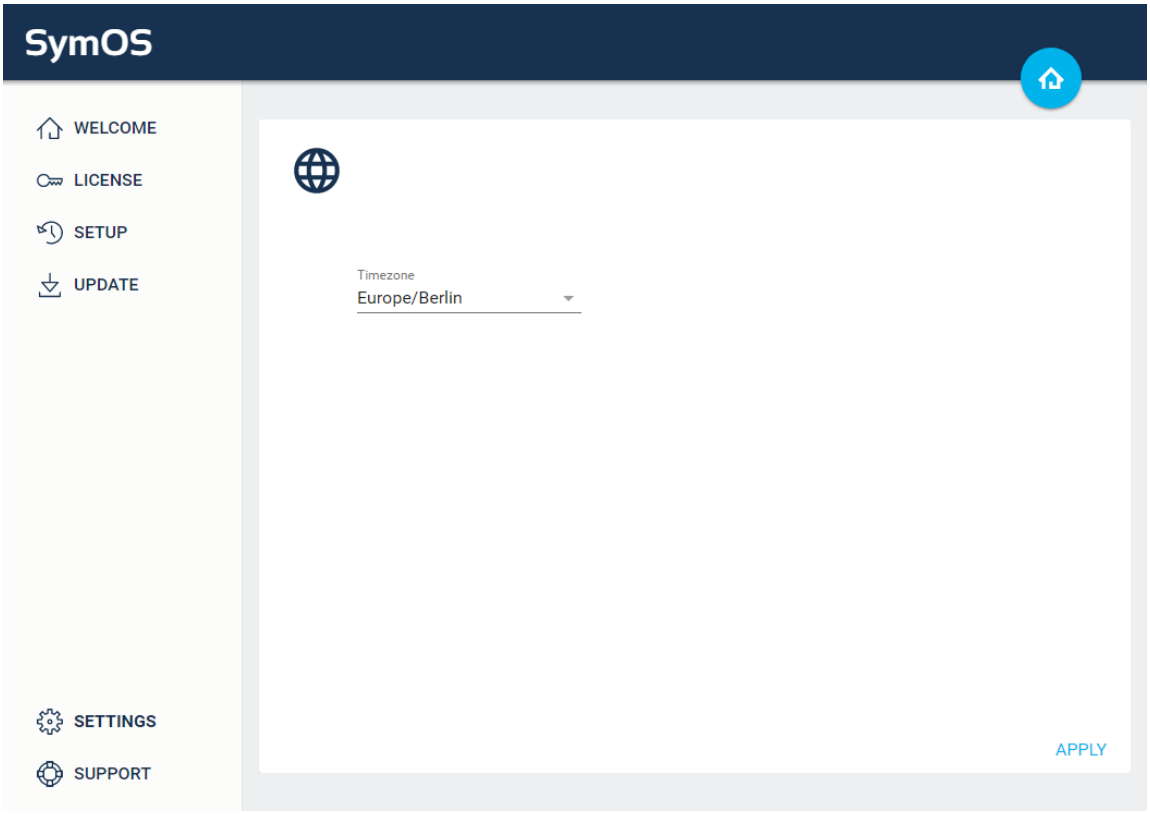
The option for remote access can be used to set a password for the configuration via the management console. This also enables the access to IP-Symcon from outside of the local network.

If no password is set, access is only possible from within the local network.



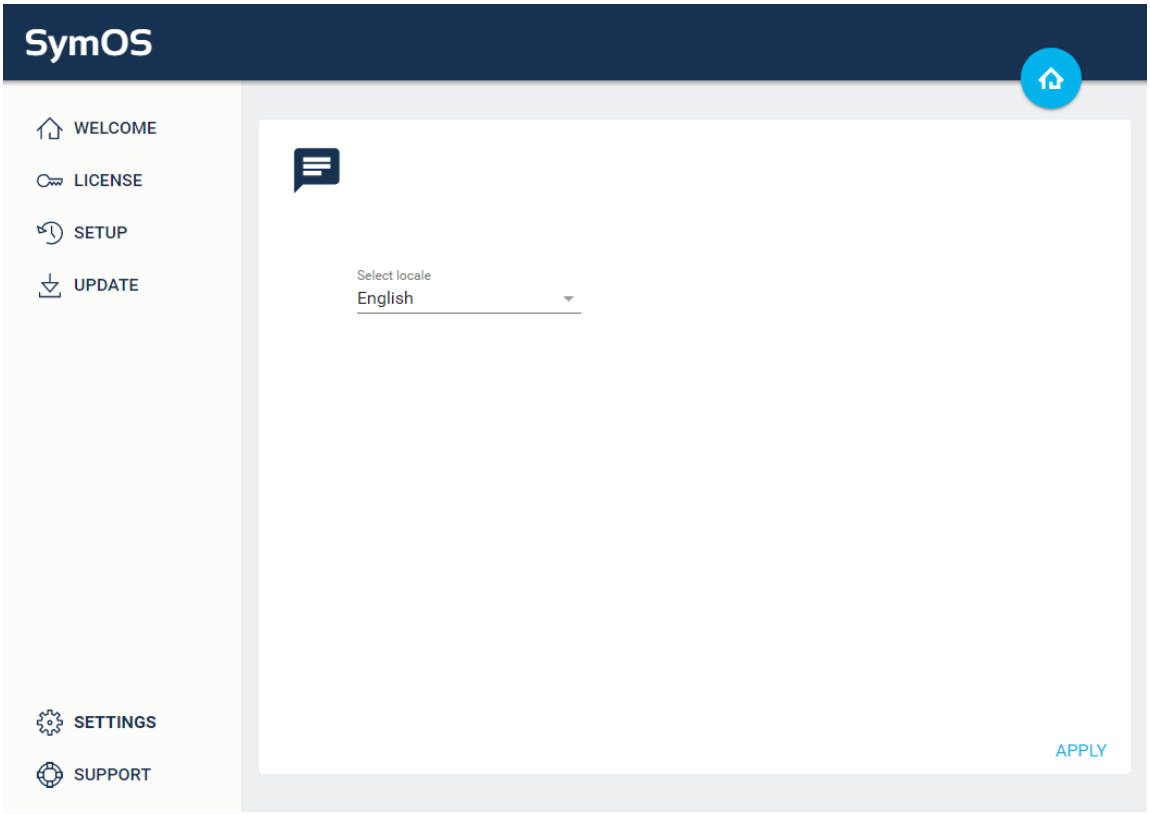
4.4.2 Time Zone

The time zone can be selected here.



4.4.3 Language

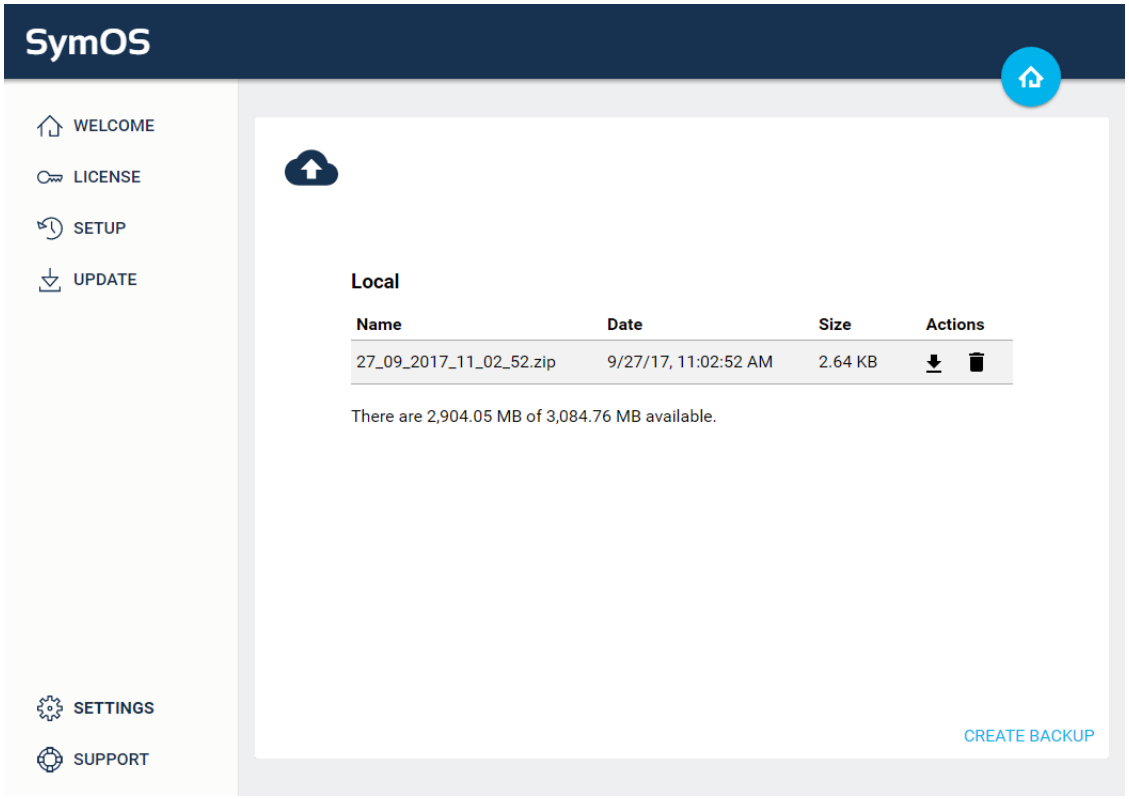
The language of IP-Symcon is set here.



4.4.4 Backup

This option is used to create a backup of the current state of IP-Symcon. After the SymBox has prepared all content, the backup is downloadable as `Backup.zip`. If a recovery is necessary, the backup can be used during Configuration. In that menu, the option “Recover from backup” can be chosen. All settings of IP-Symcon, scripts, media, and records from the database are stored in the backup.
It is also possible to load backups that were created on other systems. Further information is available in the official documentation: Create Backup.

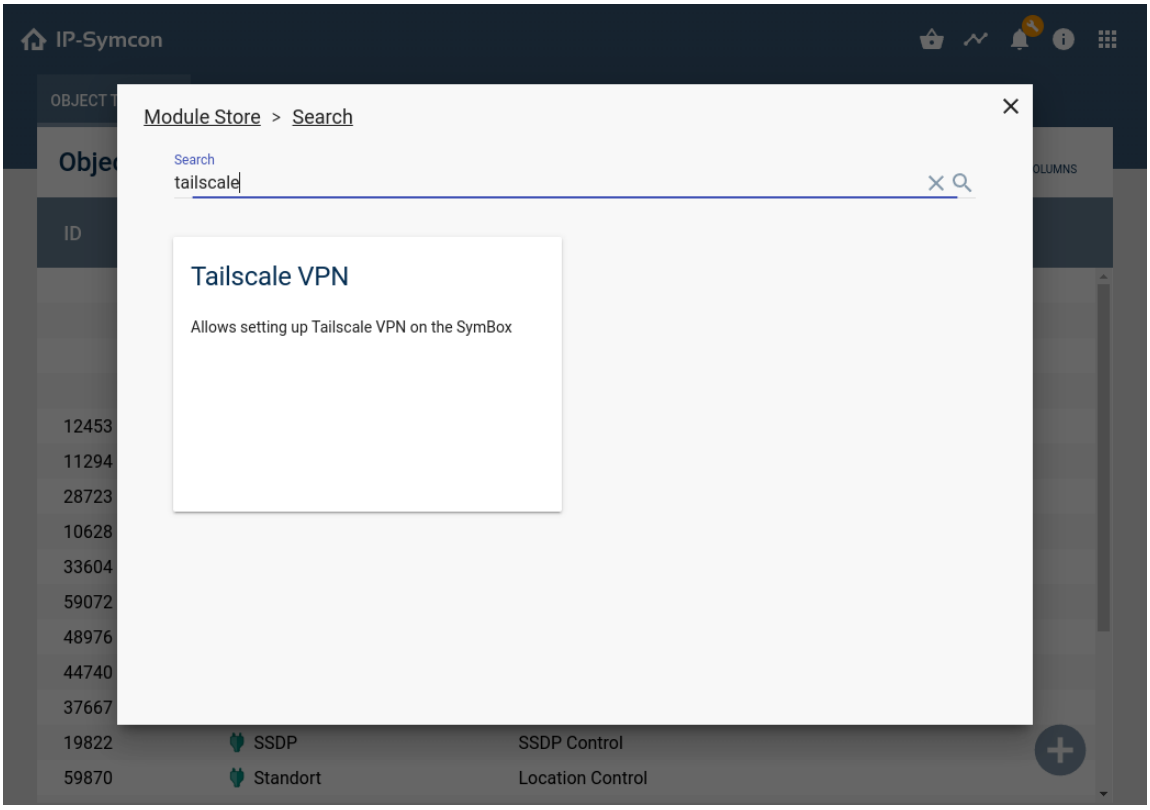
It is recommended to create backups regularly.



4.4.5 VPN

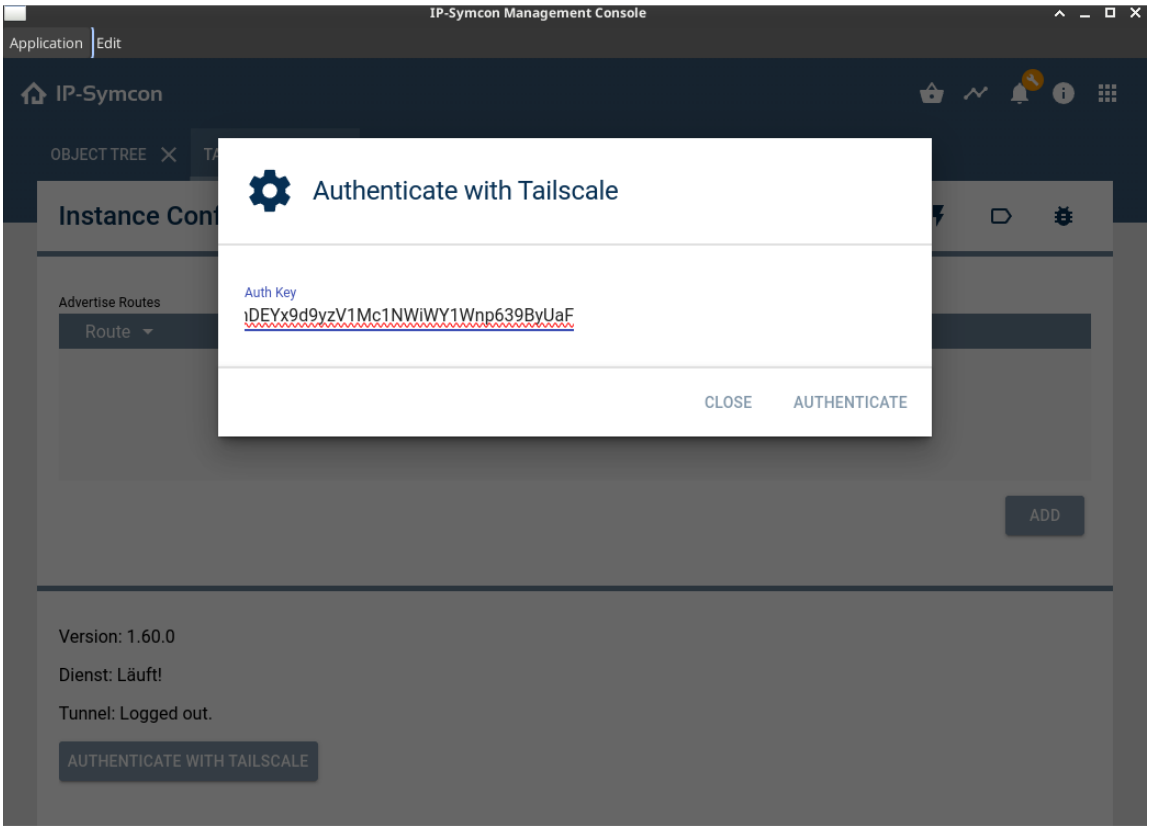
The SymBox can act as a VPN endpoint.

Tailscale An easy to use VPN solution is Tailscale VPN, which is supported natively on the SymBox. To enable this feature, the Tailscale-Module has to be installed from the Module Store in the Management Console:



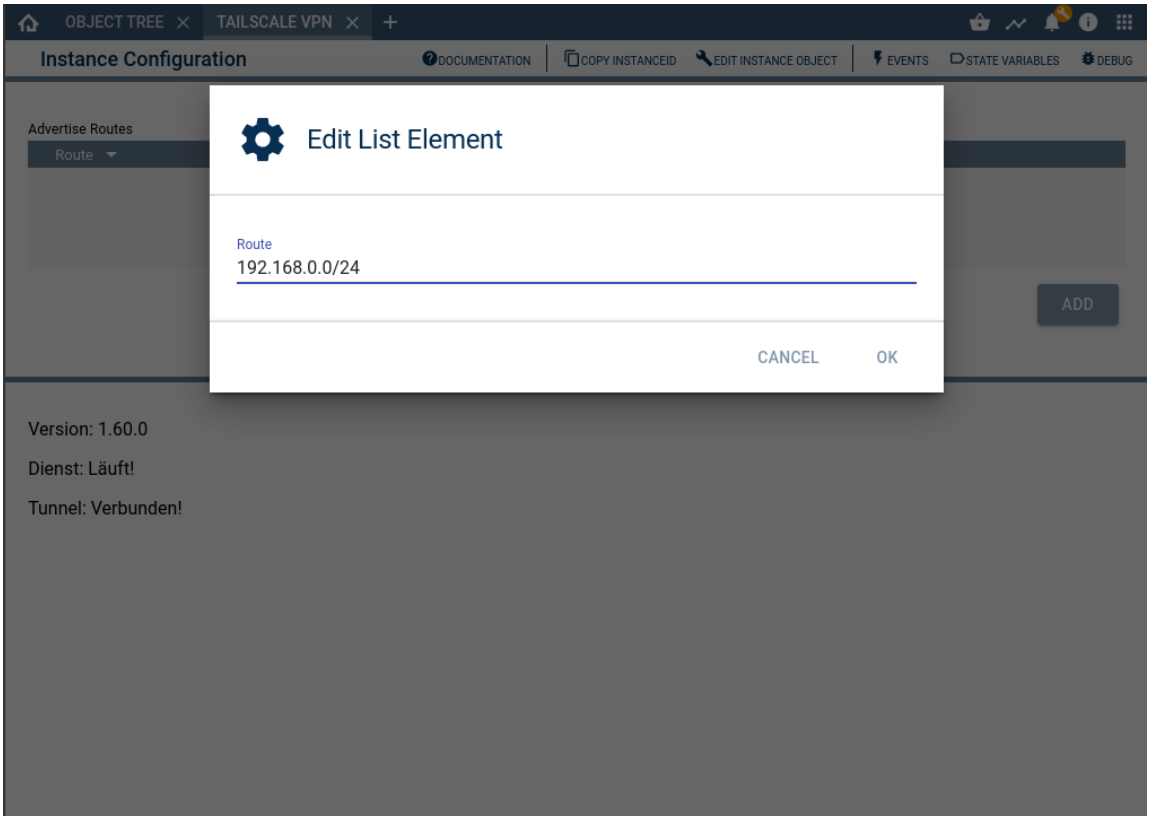
Within the Tailscale Instance the feature has to be downloaded by clicking on “Download” and started afterwards.

An account on `tailscale.com` is required. Once an account is available, an authentification key has to be generated. These can be generated and managed at:
`https://login.tailscale.com/admin/settings/keys`
The authentification key now has to be entered in the Tailscale Module:

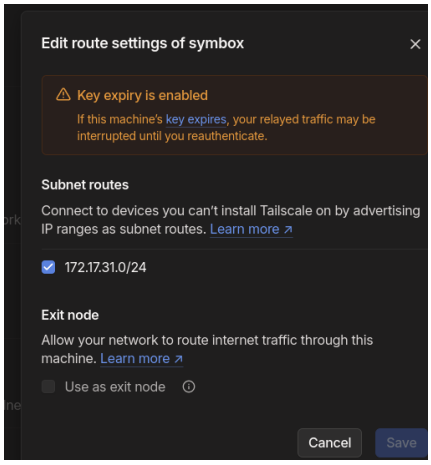


The authentification key is not required past this point, it doesn't have to be saved, etc.

Network Sharing In order for devices behind the SymBox to be reachable over VPN, the "Advertise Routes" function has to be enabled. The local subnet has to be entered in CIDR notation:



The configuration must then be confirmed and applied, and the SymBox rebooted.
The network share must be enabled in the Tailscale Dashboard. The correct machine must be selected on:
`https://login.tailscale.com/admin/machines`. On that Page, in the section "Subnets" the option "Subnet route" must be checked for the route in question:



Further Instructions Tailscale VPN is documented in our Module reference: Tailscale VPN Documentation (German)

A video which exemplifies configuring a VPN with Tailscale is available on our Youtube channel: Youtube-Video zu Tailscale

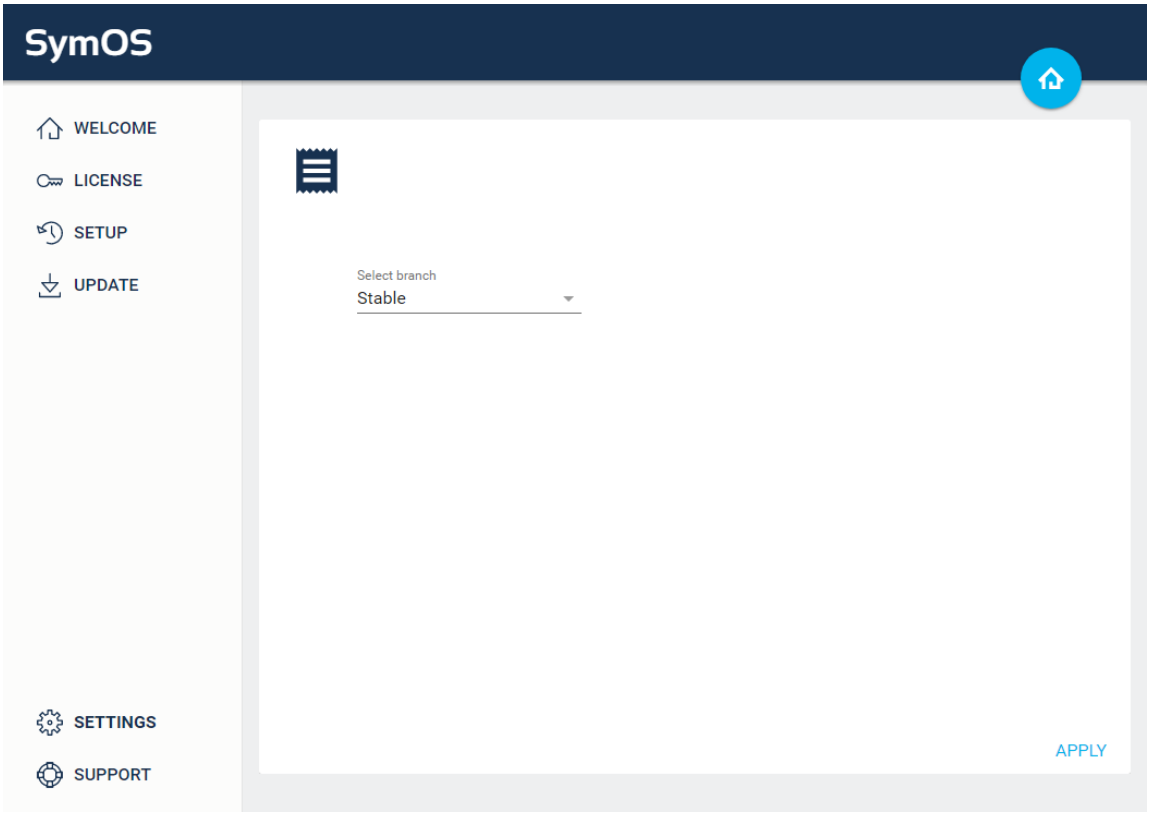
Wireguard For experts it is possible to supply a Wireguard configuration on the SymBox. The configuration file is: `/mnt/system/.wireguard`, the tool required for generating keys, `wg`, is already installed on the SymBox.

Configuring Wireguard on the SymBox requires logging in through SSH and using command line tools.

4.4.6 Update Branch

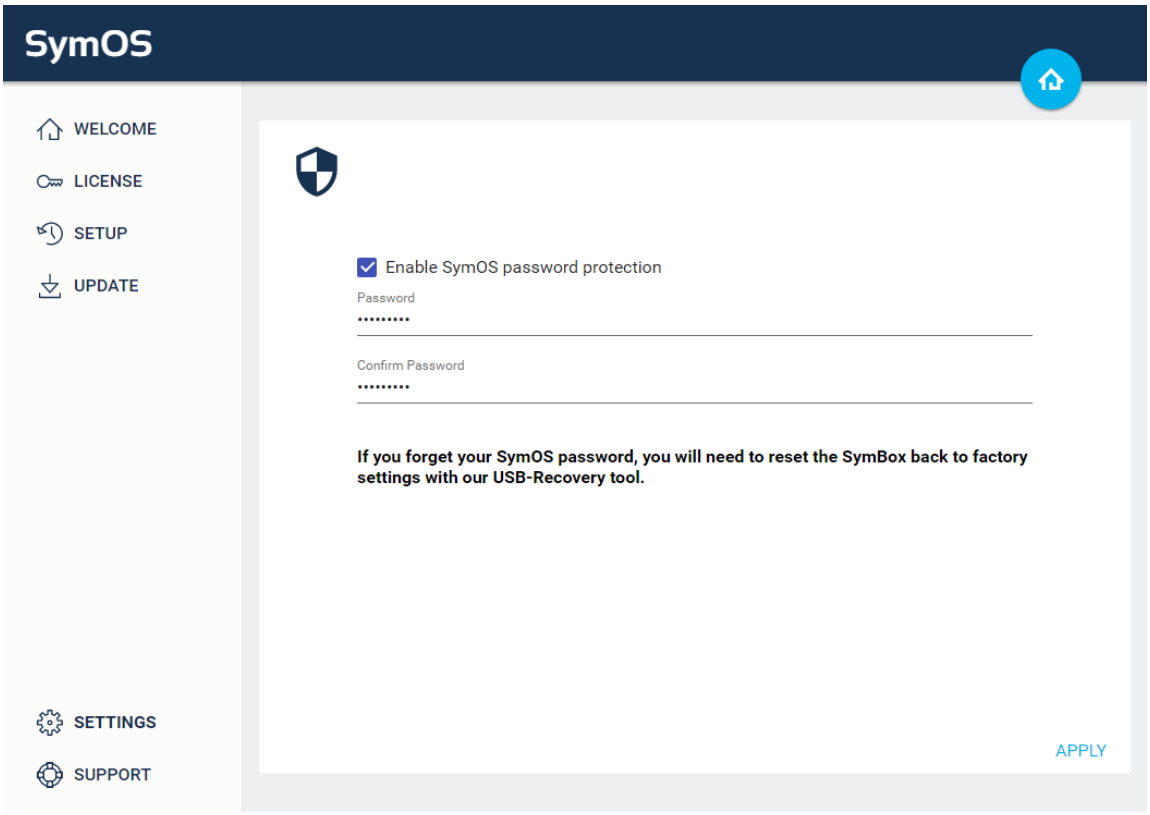
The update branch determines which variant is used during updates, i.e., “Stable”, “Beta”, or “Testing”.

It is not recommended to change this setting. “Beta” and “Testing” may contain errors as these variants are still in development. Latest information can be found in the forum.



4.4.7 Security

SymOS, the operating system of the SymBox, can be protected with a password. The password is requested on every launch of the SymOS interface before any actions can be performed.



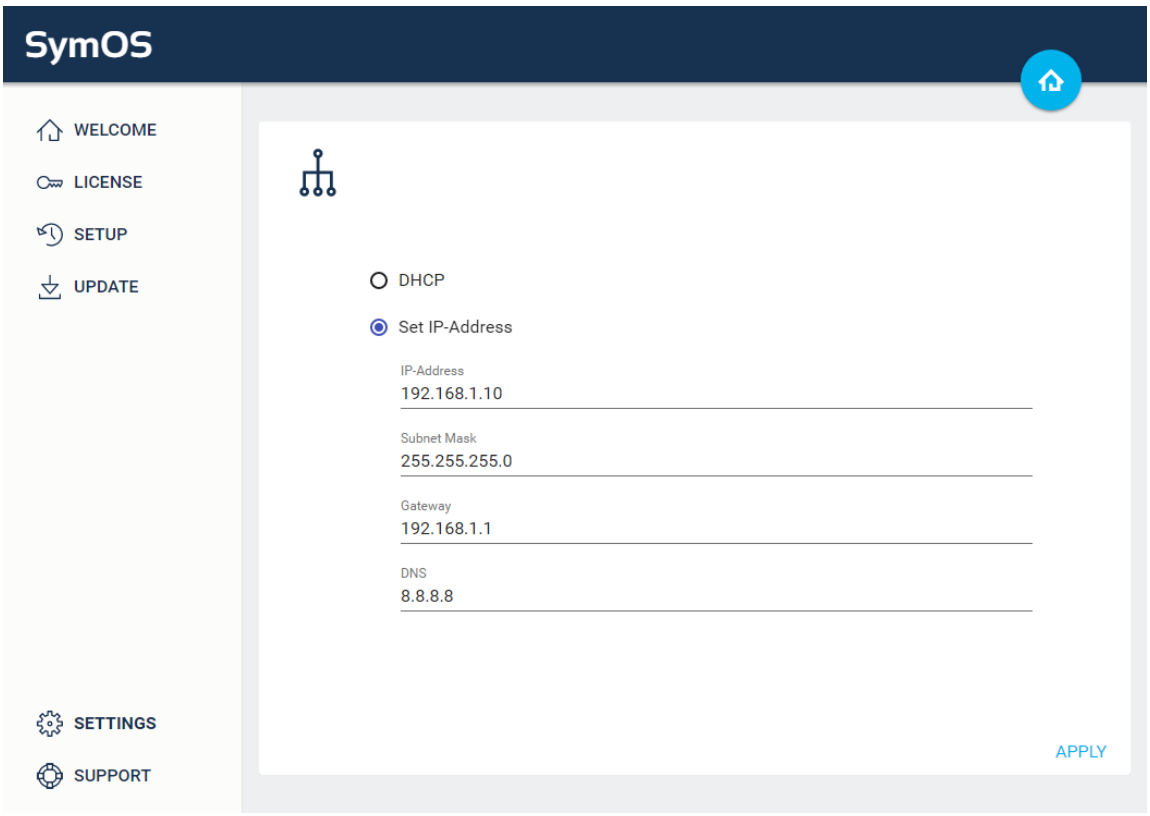
4.4.8 Network

The SymBox can be registered in the network with two options:

- DHCP (default): The SymBox is assigned an IP address automatically.
- Set IP address manually: The IP address, subnet mask, default gateway, and DNS address can be set manually.

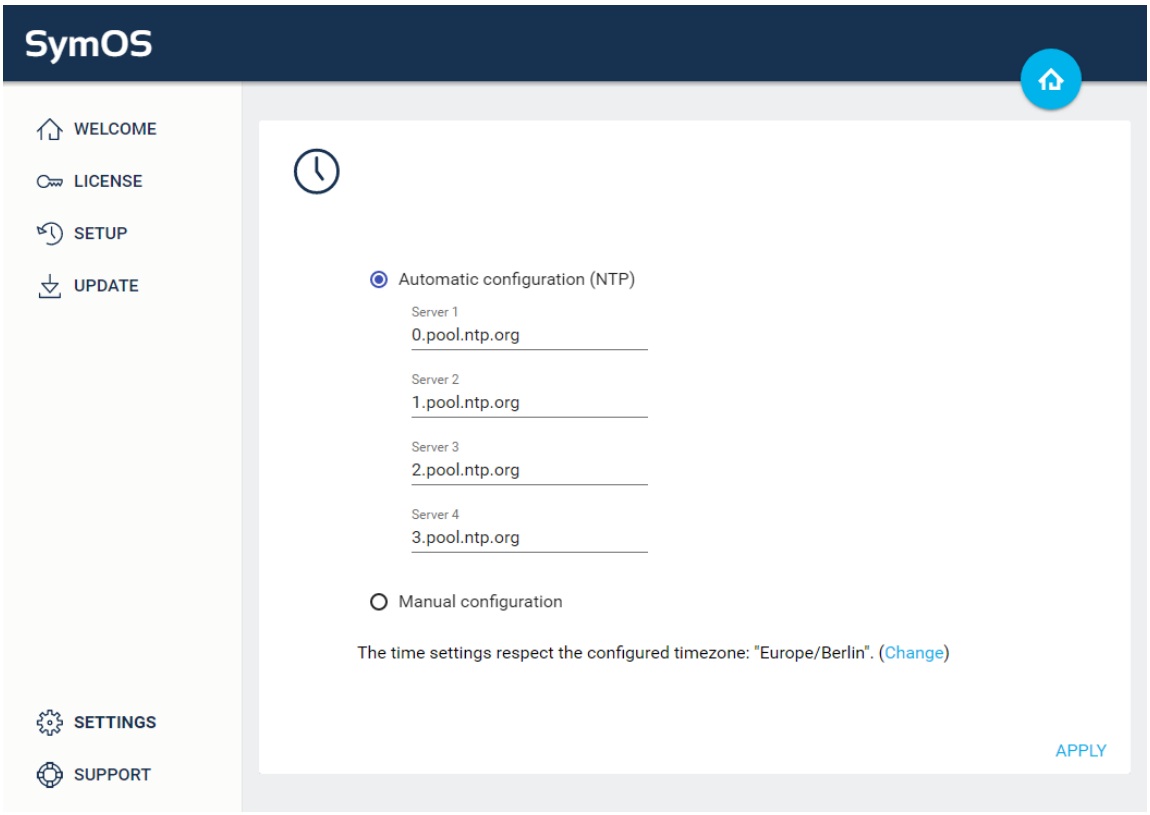
If invalid values are entered in this menu, the SymBox won't be reachable over the network any more, and will have to be reset to factory defaults with the "RecoveryTool".

Starting with SymOS version 7.0 an alternative method for configuring network settings is available, should the SymBox not be accessible over the network.



4.4.9 Date and Time

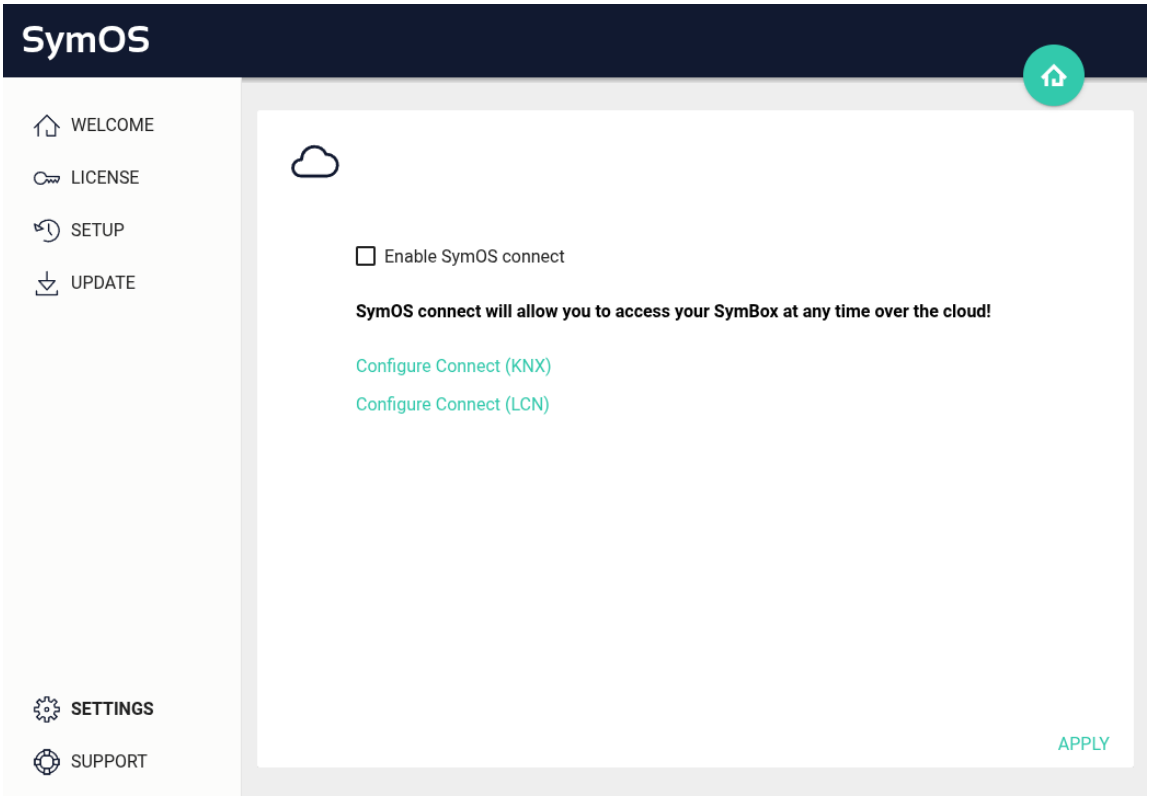
Date and time can be adjusted in this menu. It can either be set automatically via NTP server or configured manually.



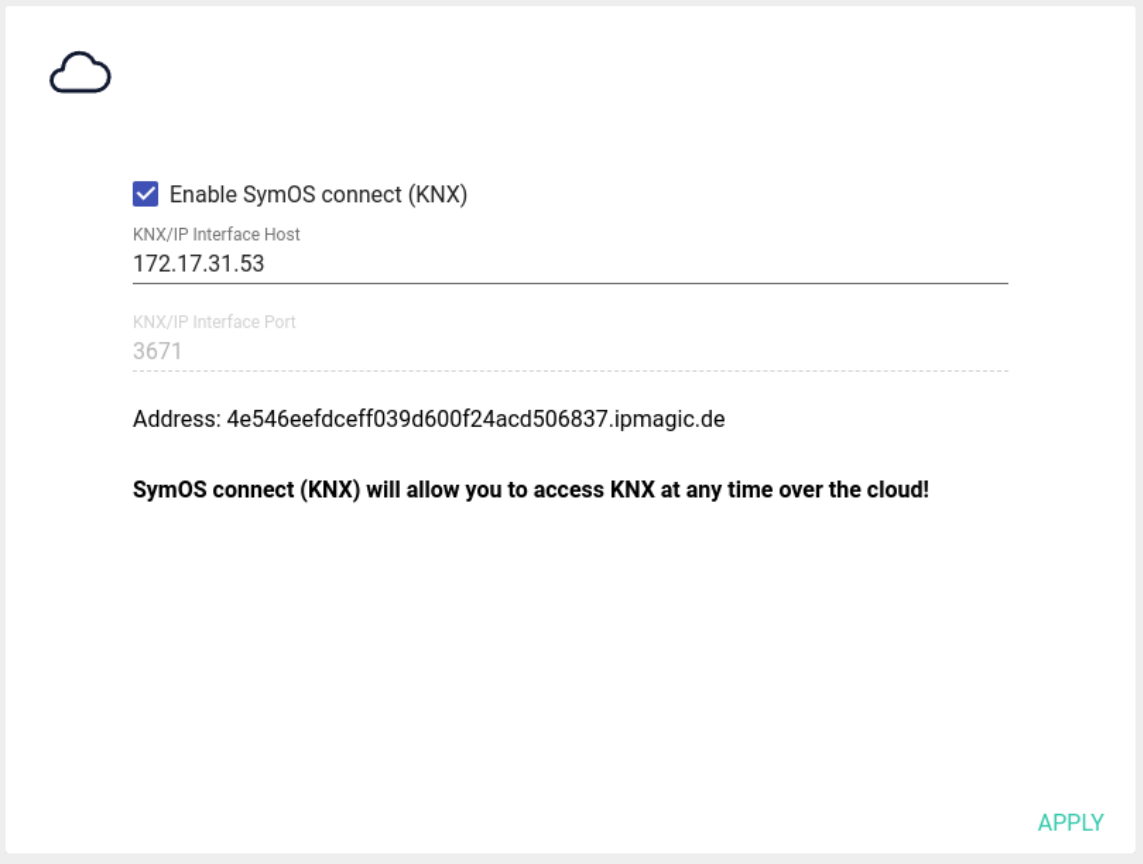
4.4.10 Connect

SymOS Connect facilitates access to the SymOS from outside the local network. This is always possible even without a valid subscription.

SymOS Connect is only available when a Remote Access password has been set.



Connect for KNX: In order to enable SymOS Connect for KNX, the KNX/IP interface has to be entered in the according field: Ensure the correct IP address of the required



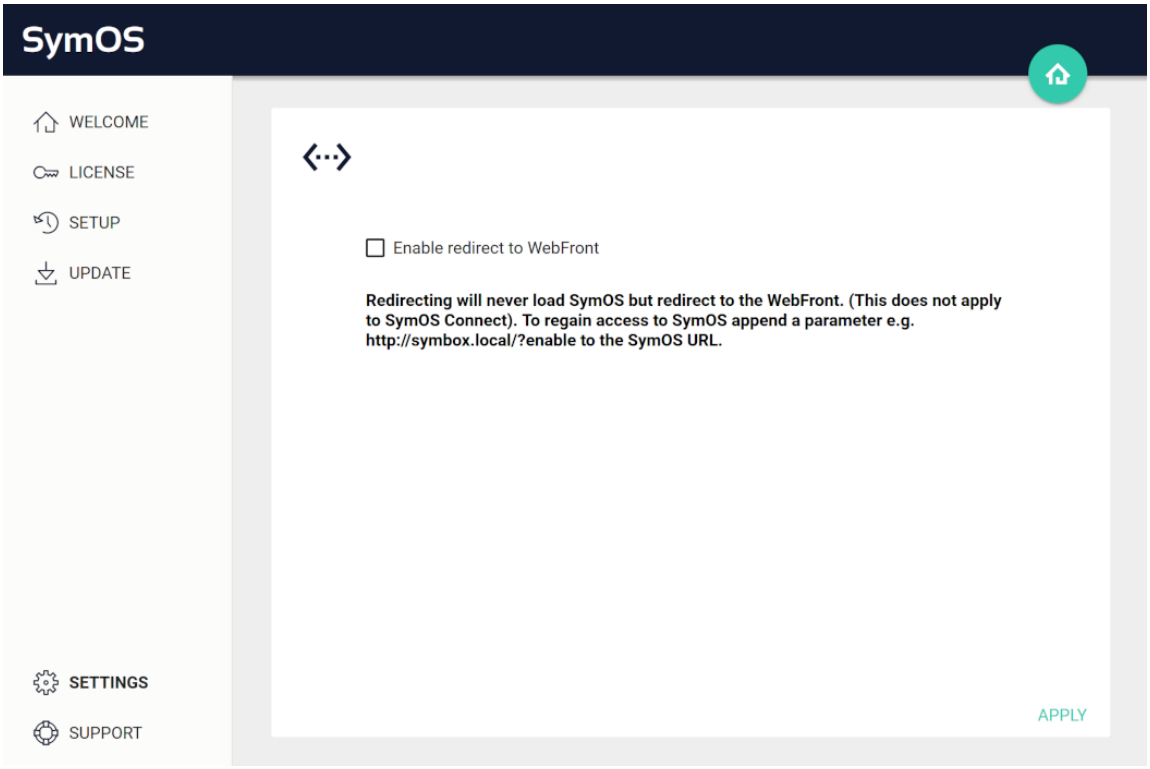
KNX/IP tunnel of the KNX/IP interface is used.
To establish the connection to SymOS for KNX, that particular connection needs to be selected in the Pro Console. Please refer to the section in the chapter “Management Console”

Connect for LCN: As described above with KNX, configuration of LCN and the PCHK-Interface is analogous:

Ensure the correct IP address of the LCN-PKE or PCN-Visu couppling module is used. To establish the connection to SymOS for LCN, that particular connection needs to be selected in the Pro Console. Please refer to the section in the chapter “Management Console”

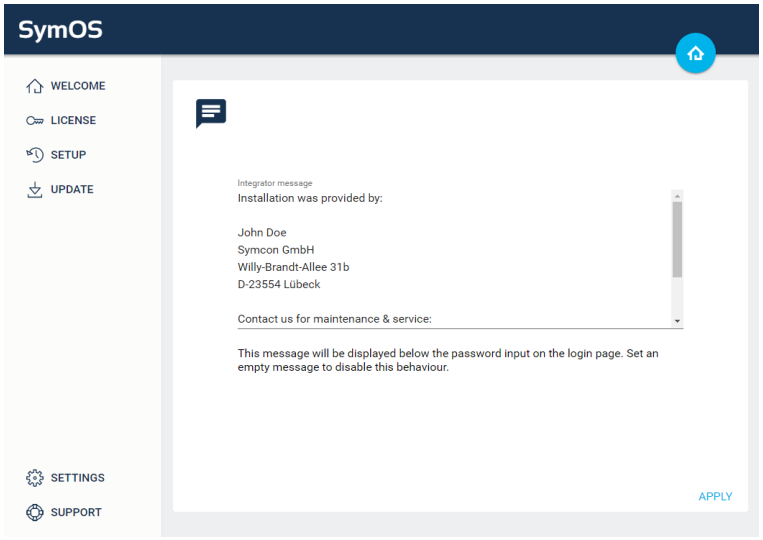
4.4.11 Redirection

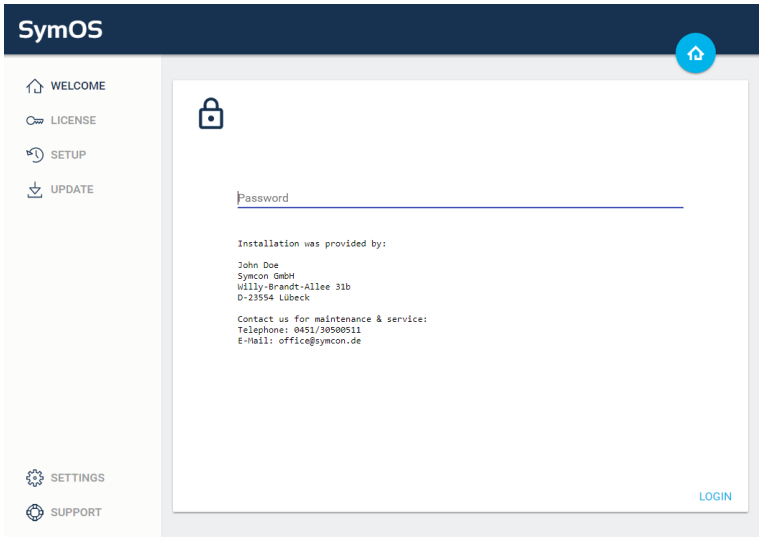
If redirection is enabled, http://symbox.local/ will not link to SymOS, instead it'll link directly to the visualization. To reach the SymOS dashboard in this scenario, the link http://symbox.local/?enable is available.



4.4.12 Integrator Message

Integrators can set a message on the login screen, which can show contact details and further information. To use this feature, remote access needs to be activated, a remote password set, and the message written at "`symbox.local/#integrator/`". Further help is provided through documentation, our community, and experts as part of a Premium Support plan.

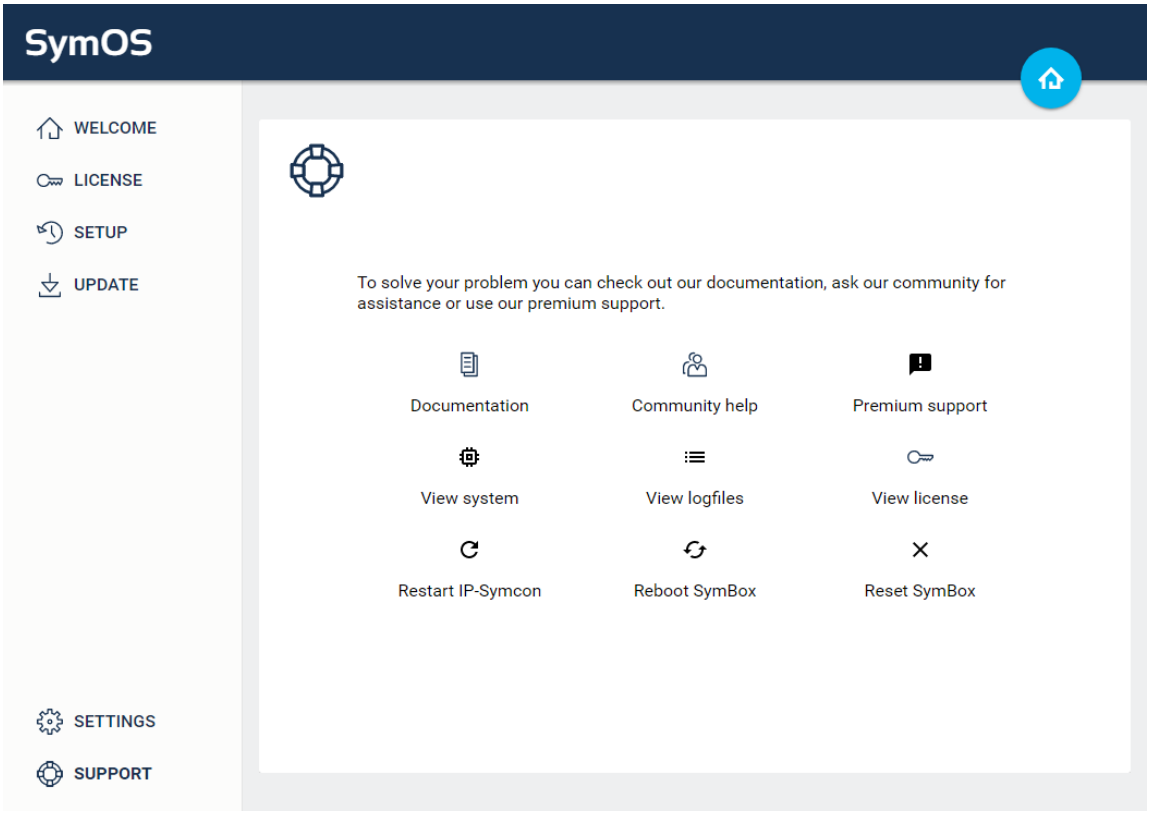




5 Troubleshooting

5.1 Support

This menu item offers options to handle problems due to errors. It is possible to restart IP-Symcon or the SymBox.
The SymBox can also be reverted to its factory state. This deletes all content from the SymBox. Afterwards, the configuration process can be started to set up the SymBox once again. Further support is offered in the documentation, by our community, or by our experts as part of the Premium Support.
Important information about the error can be found in the log files. Further license information is also available.



5.2 The RecoveryTool

The RecoveryTool for SymOS can be downloaded from the download area on the homepage and is only available for the Microsoft Windows operating system.

The download contains:

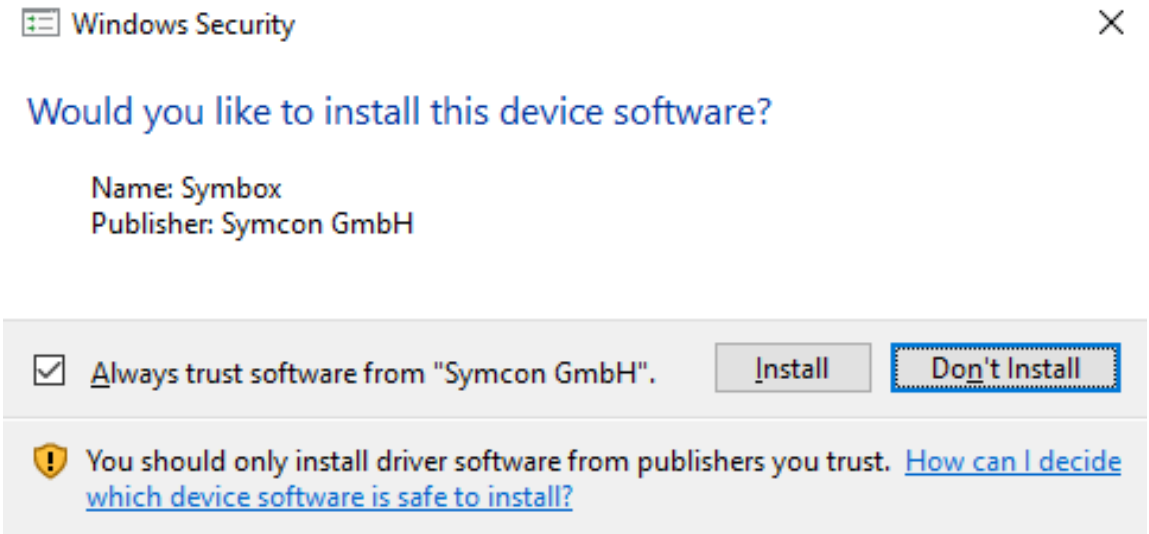
- RecoveryTool
- Current SymOS image
- Driver for the SymBox
- Visual C++ 2013 Redistributable Package

Installation and Application

After downloading and extracting the RecoveryTool, the `RecoveryTool.exe` needs to be launched as administrator.

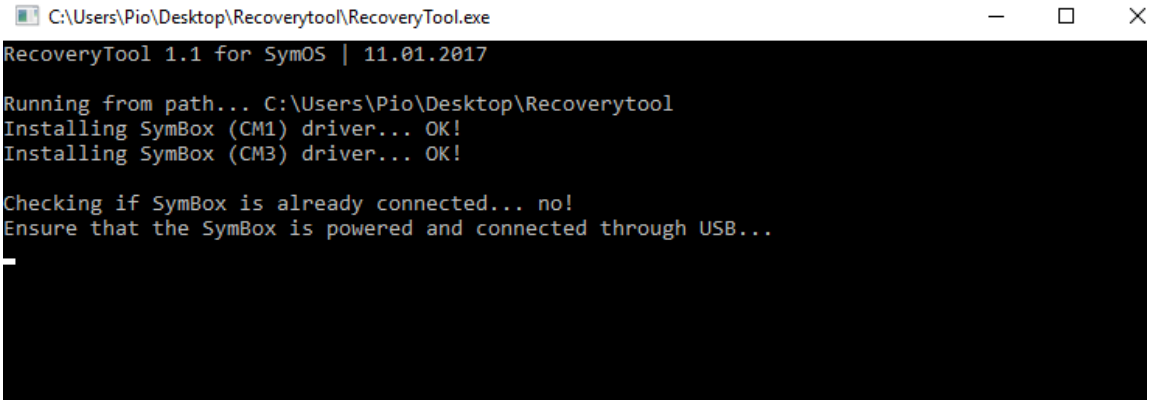
If an error message states that two `.dll` files are not found, the Microsoft Visual C++ 2013 Redistributable (x86) package is missing. The corresponding installer is contained in the download. The file `vcredist_x86.exe` needs to be executed and installed.

The RecoveryTool launches a window with further instructions.
On the first start of the RecoveryTool, the installation of the SymBox driver is requested. The corresponding dialog needs to mention the SymBox and is correctly signed by Symcon GmbH. After ensuring that the dialog is correct, the installation is started by clicking “Install”.



After the installation of the RecoveryTool, the SymBox needs to be connected to the computer via USB. If it was already connected and is not discovered, disconnect the USB cable and reconnect it again. The external power supply of the SymBox must be connected as well, as the SymBox is not powered via USB.

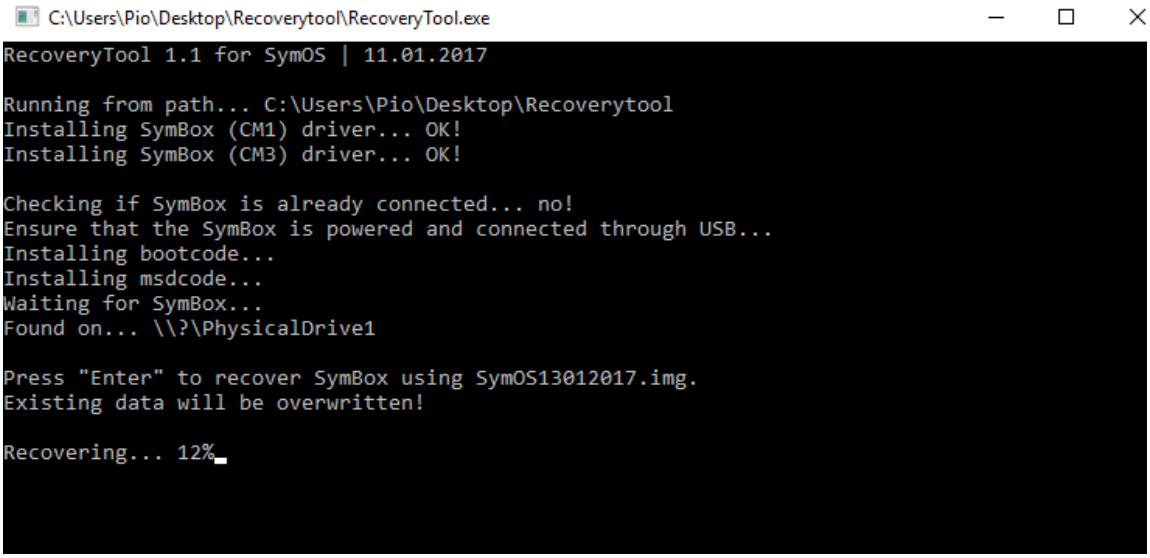
The recovery port (Micro USB) is located on the bottom, next to the LAN port. The recovery port on the SymBox^{neo} is located under the plastic cover.



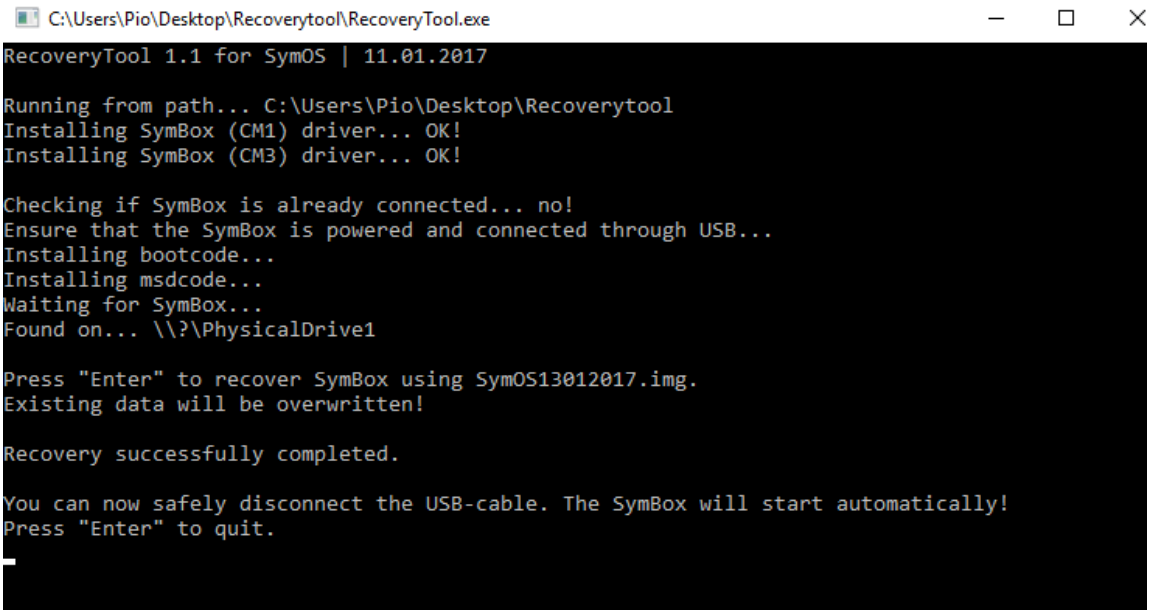
Step 1: The SymBox is detected.

Step 2: Press “Enter” to start recovery.

All files on the SymBox will be deleted. The recovery process takes approximately 5 minutes and the window closes itself if recovery was successful.



Step 3: Wait until the process is done.



Step 4: The USB cable can be removed after the process is done. The SymBox boots automatically and is accessible after 10 to 20 seconds. The IP address of the SymBox may have changed during recovery.

5.3 State Codes via LEDs

During operation of the SymBox, the LEDs on the top of the SymBox provide information about the current state of the SymBox and its internal software, i.e., SymOS and IP-Symcon.

Power LED inactive:
No appropriate power connected.

Power LED active:
Correct power connected.

House LED inactive:
Neither the SymOS nor IP-Symcon are active. If the SymBox has just been connected to power, SymOS/IP-Symcon is still in the boot process. If internet is not available, this may take up to two minutes. Otherwise this may be caused by a hardware defect.

House LED blinking:
The operating system SymOS is active but IP-Symcon is not. An update or installation of IP-Symcon via web interface may solve this problem.

House LED permanently active:
SymOS and IP-Symcon are runnning correctly. The SymBox is ready for use.

5.4 Firewall Settings for NTP

If date and time cannot be set via NTP (Network Time Protocol), a network firewall might be blocking the corresponding requests. Ensure port 123 is open. This port is required for NTP.

5.5 Time is incorrect

If the set time is incorrect, it needs to be checked if the SymBox can access the internet correctly. Furthermore, a firewall that protects the network may need to be adjusted, see Section 5.4.

After a reboot, IP-Symcon waits for a maximum of 60 seconds to synchronize the time automatically. After 60 seconds, the time is set based on the last change of the file `settings.json` and continues with that time setting. After connection to the internet and an NTP time server has been established, the current time is adjusted continuously over some time frame to the converge towards the actual time. The clock does not jump to the correct time as this jump could cause errors in running processes. On request, the SymBox can be equipped with an optional RTC module that buffers the clock during power outages and restarts.

5.6 Configuration not Possible

A configuration of IP-Symcon is not possible without an internet connection. It needs to be verified that a connection is available and working properly.

5.7 Configuring Network without Network Access

If no DHCP service is available in the network, or if there was an error configuring the network settings, it is possible to reset or set initial values.
In order to access that configuration the SymBox must be connected to a PC via a USB cable and install the `rpiboot` application.

This procedure is only available with version 7.0 and above!

Download `rpiboot`

`rpiboot` is available for Microsoft Windows on GitHub:
`https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot_setup.exe`.
(For Linux building and installation instructions are available at:
`https://github.com/raspberrypi/usbboot/tree/master`)

Installation (Microsoft Windows)

After the file `rpiboot_setup.exe` has been successfully downloaded, run the application and follow the instructions.

5.7.1 Executing

Connect the SymBox with a Micro-USB cable with the PC and run `rpiboot`. Microsoft Windows might now ask for permissions, which need to be accepted.
On Linux `rpiboot` should be run as root (for instance with the help of `sudo`).

Windows will ask whether to format the newly attached partitions, it is imperative NOT to format those partitions, otherwise the SymBox has to be reset to factory defaults with the Recovery Tool!

5.7.2 Open `boot`-Partition

Several new partitions should now appear in the Windows file manager. In the `boot` partition several files should be present.

5.7.3 Creating `ip.txt`

Create a file named `ip.txt` in the root directory of the `boot` partititon.

5.7.4 DHCP

To configure the SymBox network settings through DHCP (this is the default), `ip.txt` should contain the following content:

```
dhcp
```

It is important to make sure, that no other lines or characters are present in the file.

It is imperative to use a text editor (such as Notepad)! A word processor application like Microsoft Word CANNOT be used under any circumstances!

5.7.5 Static IP Address

To assign a static IP address, `ip.txt` should contain the following lines:

```
address <ip>
netmask <netmask>
gateway <gateway_ip>
```

Replace `<ip>` with a valid and unused address, such as 192.168.0.100.
Replace `<netmask>` with the network mask, this is usually 255.255.255.0.
Replace `<gateway_ip>` with the network's gateway or router IP address, such as 192.168.0.1.

5.7.6 Save and close partition

Ensure the file has been saved.
The partition should now be **safely removed**, using the file manager.

5.7.7 Reboot

After all partitions have been safely removed, removing the USB cable from either the SymBox or the PC will make the SymBox reboot.

The SymBox will now apply the new network configuration and delete `ip.txt` off of the `boot` partition.
Should it be required to run the configuration procedure anew, re-creating the `ip.txt` file on the `boot` partition is required.

6 Revisions

	SymBox Pro	**SymBox^{neo}**	**SymBox**
Revision	2022	2017	2015
Voltage	24-30V[2]	5-24V	5V
Connectors			
Top side	-	-	LAN RJ45
Bottom side	LAN RJ45, recovery port (USB), extension port (3-pin), green DC port (2-pin)	LAN RJ45, green DC port (2-pin)	black DC port
Expansions			
RTC	optional	optional	optional
RS232	optional[1]	optional[1]	-
RS485	optional[1]	optional[1]	-
M-Bus	optional[1]	optional[1]	-
KNX	optional[1]	optional[1]	-

[1] Only one of these expansions can be built-in per SymBox Pro / SymBox^{neo}.

[2] From manufacturing date of 2025, the SymBox is capable of being supplied with 24V to 30V DC. (check the product label on the back, the line starting with "S/N". The date code is in parentheses (eg. "(25-01)" is January of 2025).

7 Technical Data

7.1 General Data

	SymBox Pro	**SymBox^{neo}**	**SymBox**
Width	DIN Rail (4 DU)	DIN Rail (4 DU)	DIN Rail (4 DU)
Dimensions (H × W × D)	90 × 72 × 58 mm	90 × 72 × 58 mm	90 × 72 × 58 mm
Weight	200g	150g	150g
Ingress Protection	IP20	IP20	IP20
Mounting	DIN Rail TH35	DIN Rail TH35	DIN Rail TH35
Voltage	24V - 30V[2]DC	24V DC (5 - 25V)	5V DC
Power consumption	max. 6W	max. 5W	max. 3W
Temperature Range	0°C - 50°C	0°C - 50°C	0°C - 50°C
CPU	ARMv8-A (64-bit) 1.5GHz	ARMv7 (64-bit) 1.2 GHz	ARMv6Z (32-bit) 700MHz
RAM	1GB / 2GB LPDDR4	1GB LPDDR2	512MB LPDDR2
Flash	16GB / 32GB eMMC	8GB / 32GB eMMC	4GB eMMC
Operating System	SymOS	SymOS	SymOS
Ethernet Interface	1000BaseT, 1GBit/s through RJ45 socket	100BaseT, 100MBit/s through RJ45 socket	100BaseT, 100MBit/s through RJ45 socket
Extension Ports	System Terminal (pluggable), Micro USB for recovery	System Terminal (pluggable), Micro USB for recovery (internal)	System Terminal (pluggable), Micro USB for recovery
Status Display	White LED for power and system status	Blue LED for system status	Blue LED for system status
Controls	-	1 Reset button (internal)	-
Optional extensions	KNX[1], M-Bus[1], RS232[1], RS485[1], RTC	KNX[1], M-Bus[1], RS232[1], RS485[1], RTC	-

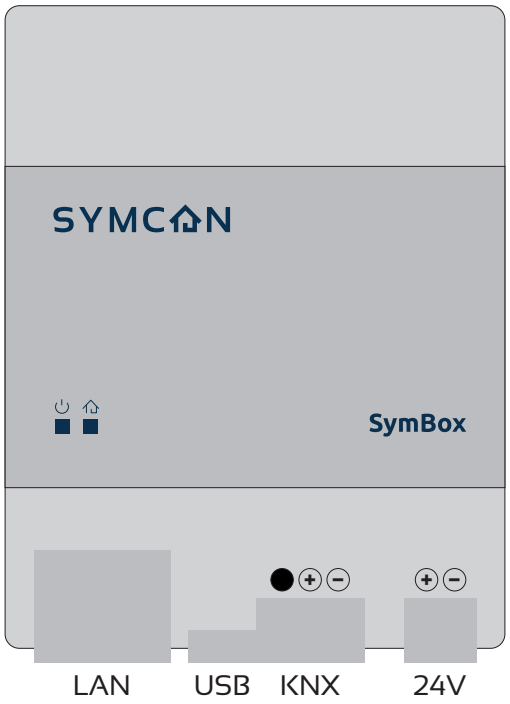
[1] Only one option per each SymBox Pro / SymBox^{neo} may be installed.
[2] Only 24V on SymBoxes produced **before 2025**!

7.2 Expansion Option Data

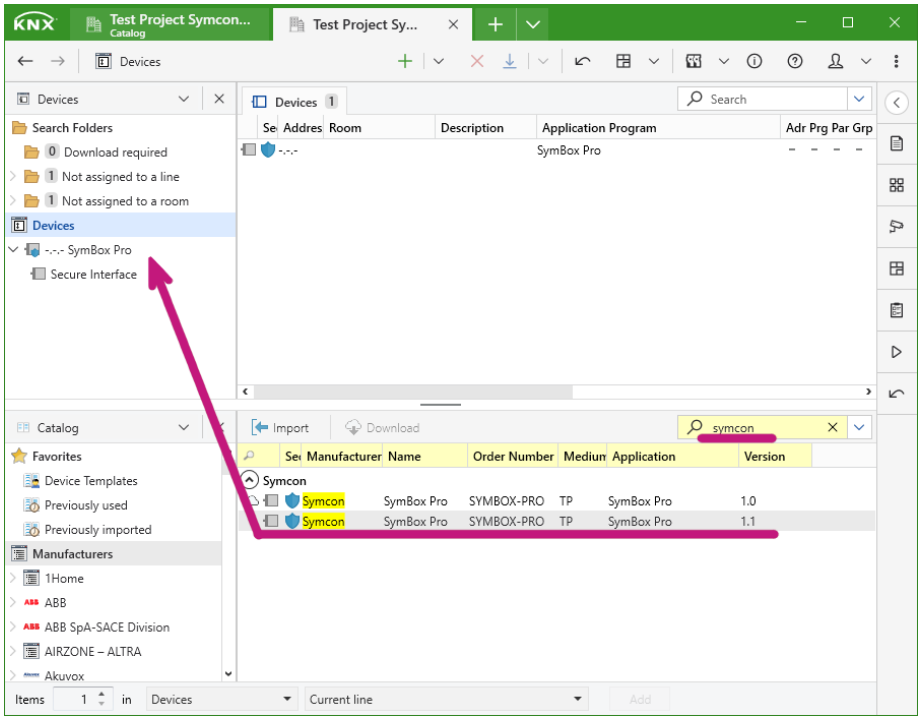
7.2.1 KNX

The connector is a 2-pin systems connector from Phoenix corp.

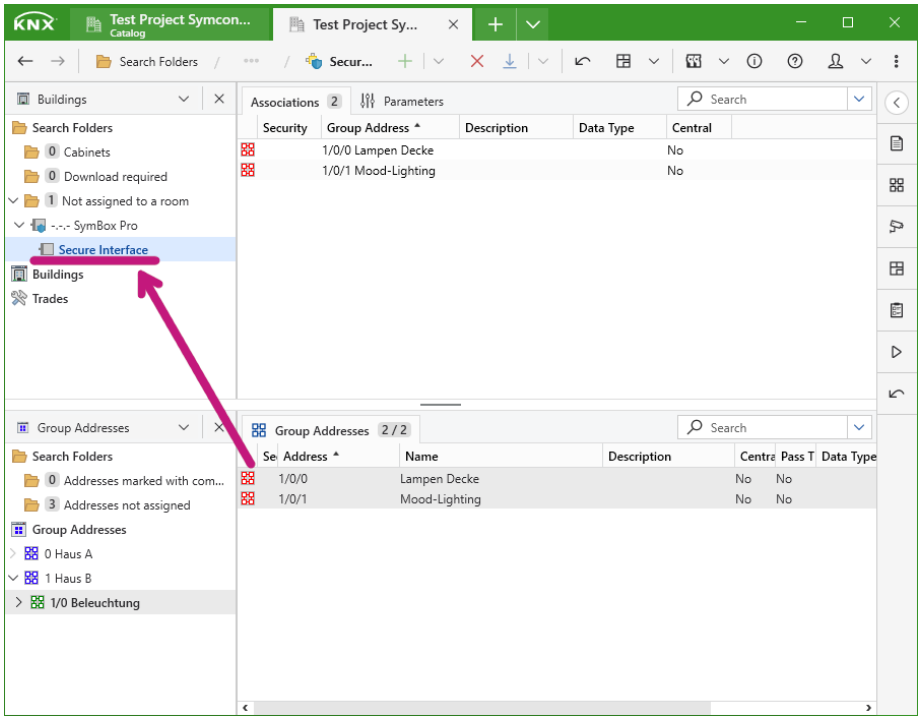
Setting the physical address may be done directly with IP-Symcon (ver. 6.2 and above) on the KNX gateway, with which the KNX extension may be put into programming mode. The installed KNX interface is based on the Weinzierl KNS BAOS module and is henceforth KNX certified.



The SymBox must be selected in the ETS product catalog:

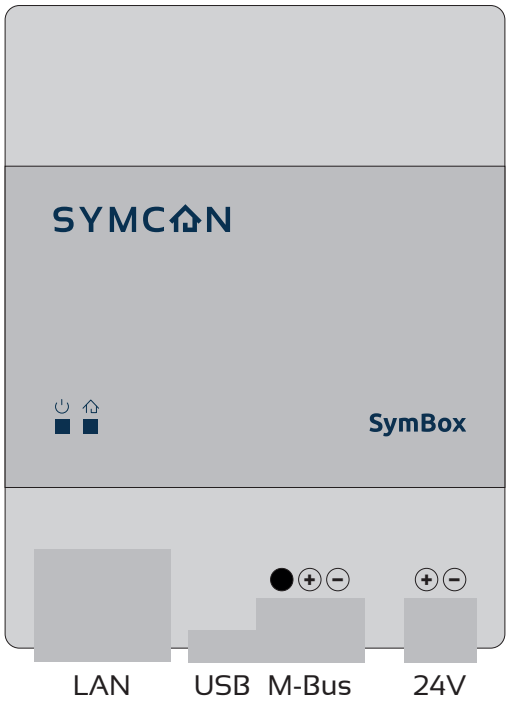


For *KNX Data Secure* operation mode, all group addresses have to be moved onto the **Secure Interface** of the SymBox:



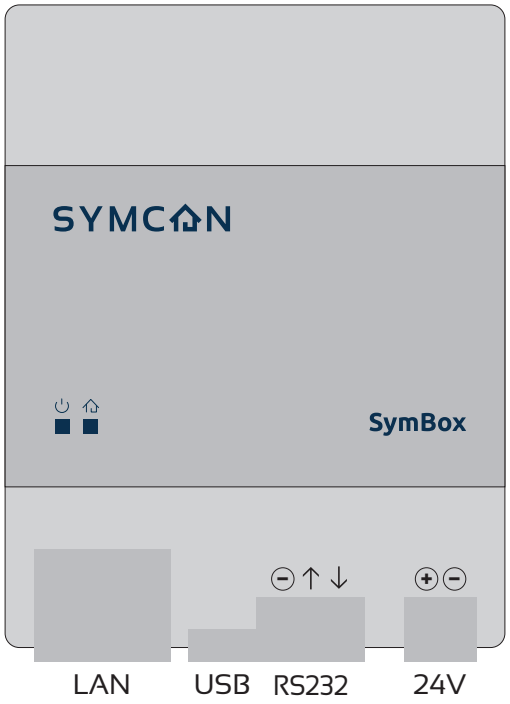
7.2.2 M-Bus

The connector is a 2-pin systems connector from Phoenix corp.
The installed M-Bux interface is based on the MBUS-M13-S from Solvimus and is M-Bus certified.



7.2.3 RS232

The connector is a 3-pin systems connector from Phoenix corp.



7.2.4 RS485

The connector is a 2-pin systems connector from Phoenix corp.